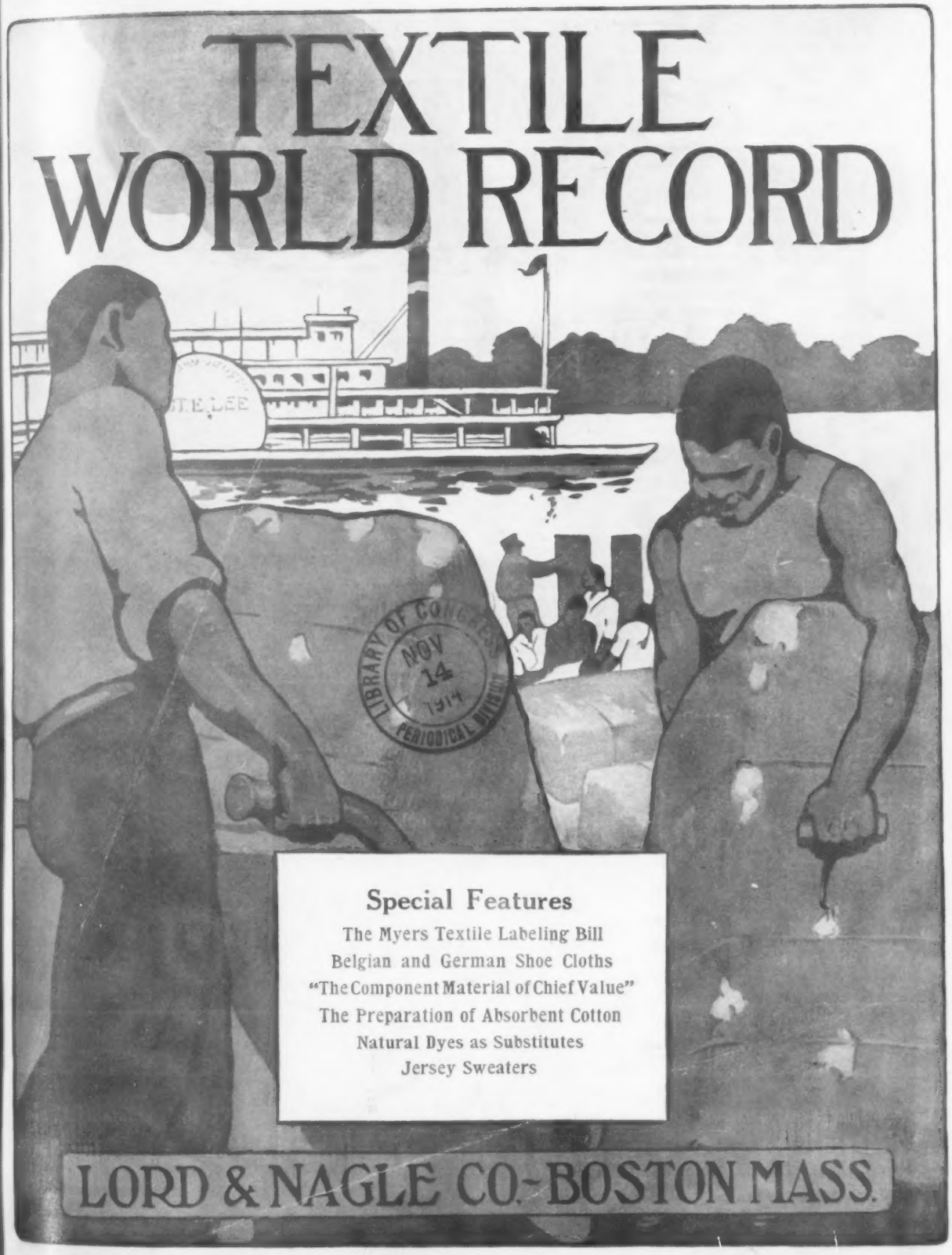
Number 2
Volume XLVIII

NOVEMBER, 1914

$2.00 per year
$3.00 with Directory

TEXTILE WORLD RECORD



Special Features

The Myers Textile Labeling Bill
Belgian and German Shoe Cloths
"The Component Material of Chief Value"
The Preparation of Absorbent Cotton
Natural Dyes as Substitutes
Jersey Sweaters

LORD & NAGLE CO.-BOSTON MASS.

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The TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.

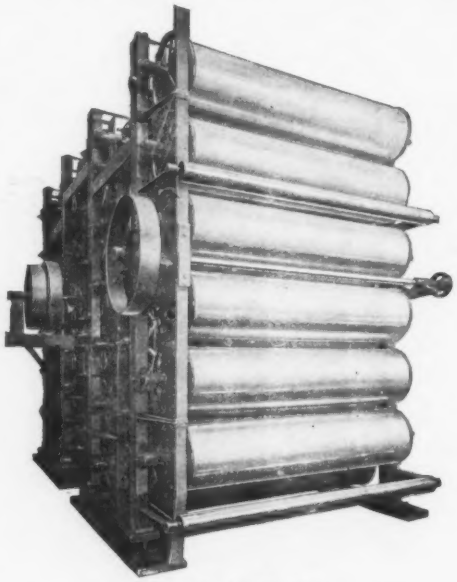
BUILDERS OF

Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Machinery

FOR

TEXTILE FABRICS AND WARPS

Plans and Estimates for Complete Plants



Upright Drying Machine

ALL KINDS OF

Horizontal and Upright Drying Machines

With cylinders made from either the best English tinned iron or best Lake Superior sheet copper, fitted with our

Patent Spiral Scoops

Bleaching Kiers with Patent Circulators

FOR

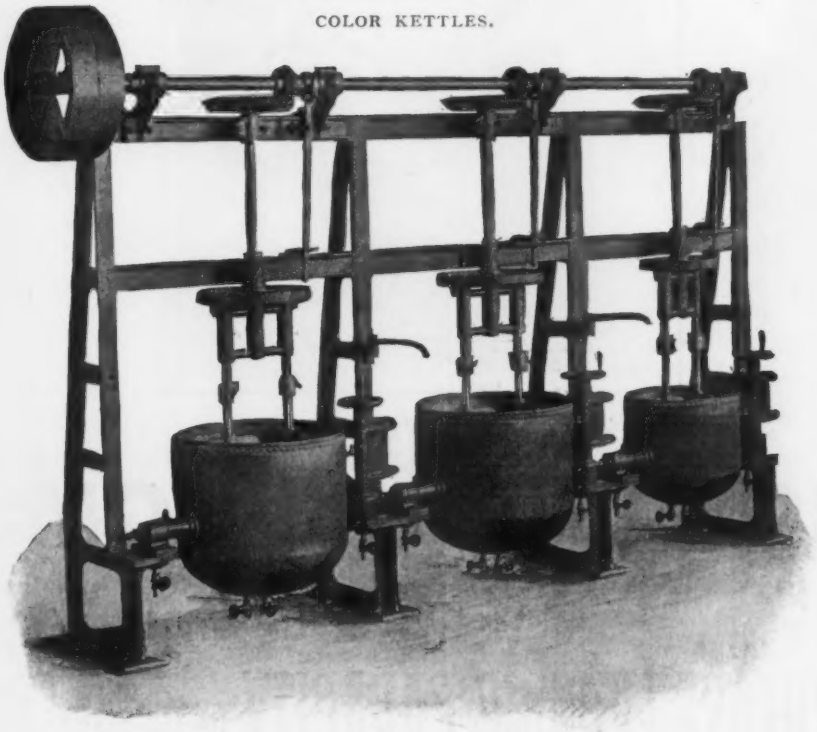
Raw Stock, Yarn, Woven and Knit Goods

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

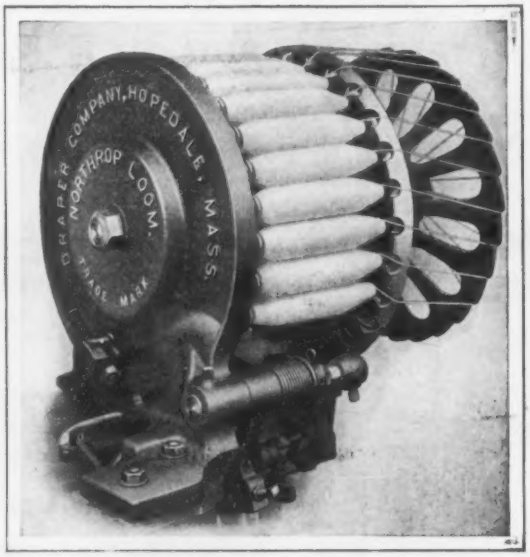
Providence Office, Room 417 Industrial Trust Building.

COLOR KETTLES.



Bleaching, Dyeing, Drying, Finishing, Machinery

for all kinds of textile fabrics.



NORTHROP LOOMS

TRADE MARK REGISTERED

INCREASE EARNING CAPACITY OF THE WEAVE ROOM WEAVERS

DRAPER COMPANY

HOPEDALE MASS.

THE BEST

NORTHROP LOOM BOBBINS

AND

SHUTTLES

ARE MADE BY

Northrop Loom Manufacturers

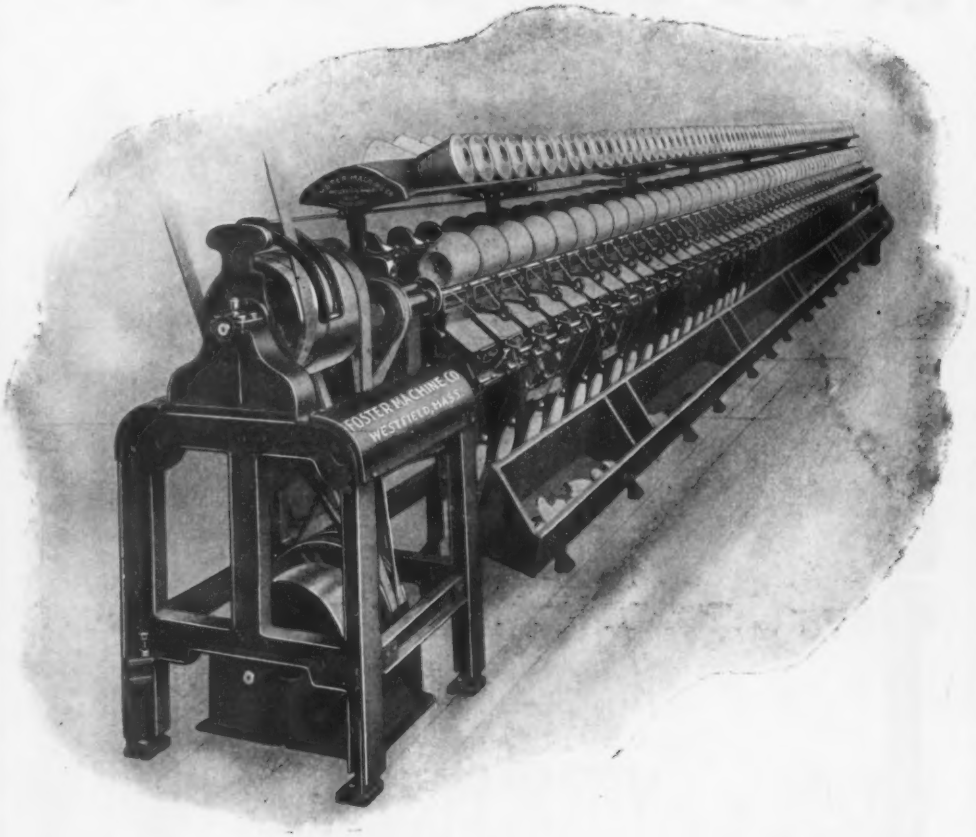
Look for our name on your Bobbins and Shuttles

DRAPER COMPANY

Hopedale Mass.

J. D. CLOUDMAN Southern Agent 40 So. Forsyth St. Atlanta Ga.

Foster Machine Co.



The Foster Model 12 differential attachment spaces the yarn on the cone in winding so as to secure in the Knitting process a light unwinding tension that does not change from start to finish of cone. ¶ This is *one* of the exclusive features that has made the Foster Finished cone acceptable to all Knitters.

Office and Works

Westfield, - - Massachusetts

John Hill, So. Agent, Third National Bank Bldg., Atlanta, Ga.

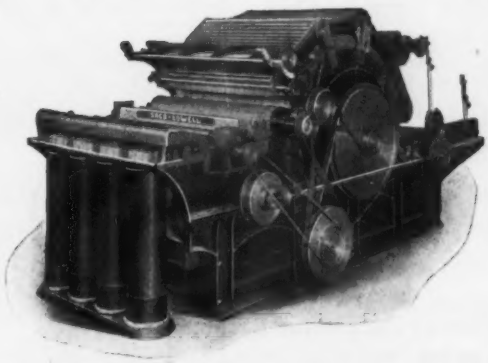
Saco-Lowell Shops

TEXTILE MACHINERY

WASTE RECLAIMING MACHINERY

COMPLETE COTTON MILL EQUIPMENT

Including:
Pickers
Cards
Drawing
Evener Drawing
Roving
Spinning
Twisters
Slashers
Spoolers
Reels
Winders
Warpers
Looms



FOUR COILER FRONT CARD

Used in connection with our WASTE SYSTEM

WORSTED MACHINERY

Including:
Revolving Creels
Gill Boxes
Drawing Frames
Reducing and Roving Frames
Cap Ring and Flyer Spinning and Twisting Frames
Jack Spoolers

THE RESULT OF OUR LONG EXPERIENCE AND STUDY UNDER ACTUAL MILL CONDITIONS ENABLES US TO BUILD MACHINERY WHICH SUCCESSFULLY MEETS THE VARIED REQUIREMENTS

Shops—
Lowell, Mass.
Biddeford, Maine
Newton Upper Falls, Mass.

Executive Offices—
77 Franklin Street,
Boston, Mass.

Southern Agent, ROGERS W. DAVIS,
Charlotte, N. C.

LEIGH & BUTLER

SUCCESSORS TO

EVAN ARTHUR LEIGH

232 Summer Street opposite the South Station), Boston, Mass.

SOLE AGENTS

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen & Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber—will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Wastes into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

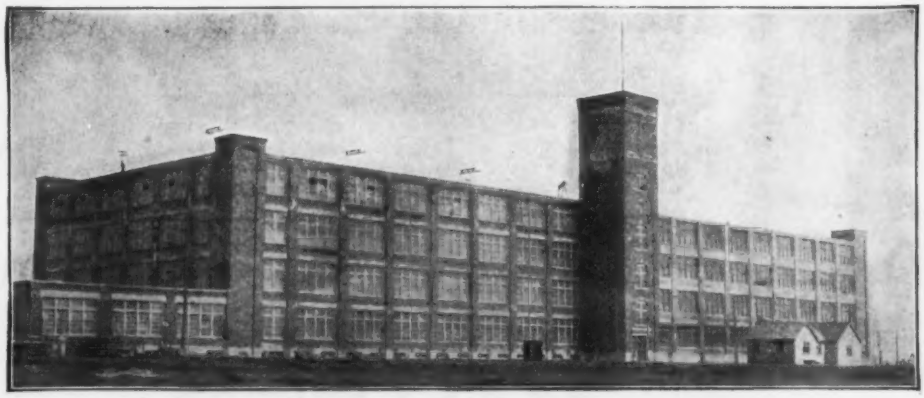
Dyeing and Finishing Machinery

Archbutt-Deeley System for purifying and softening water.

JOSEPH SYKES BROS. Card Clothing for Cotton.
JAMES CRITCHLEY & SONS. Card Clothing for Woolen and Worsted.
WILSON BROS. BOBBIN CO. Bobbins, Shuttles, Etc.
THOMAS B. HAIGH. Double Loop Bands, Spinning Tape, Etc.
DRONSFIELD BROTHERS. Grinding Machinery and Emery Filleting.
HARDING'S Fallers, Pins and Circles.
The Best French and English Combing and Rubbing Aprons.
Card Flats reclothed and Lickers-in rewound.

"CARRIER EQUIPPED" MILLS

Make for a High Standard of Efficiency



THE CARRIER SYSTEM maintains in plants all over the country, under all conditions, the right temperature and humidity for the manipulation of fibres.

Right conditions winter and summer mean a uniformity of production—mean that you can use to great advantage shorter staple raw material—mean better yarn and better cloth.

These conditions make your operatives healthier and more content and insure greater production.

It costs you nothing to have our engineer talk over the advantage of the CARRIER SYSTEM with you.

WRITE FOR OUR CATALOGUE

Carrier Air Conditioning Co.

Of America

No. 39 Cortlandt Street, New York City

NEW ENGLAND
176 Federal Street
Boston

CHICAGO
Ft. Dearborn Bldg.
Clark and Monroe Sts.

PHILADELPHIA
734 Real Estate Trust Bldg.

BUFFALO, 490 Broadway

COTTON MILL MACHINERY

Carding Spinning

MASON MACHINE WORKS

Drawing Weaving

Executive Office, 77 Franklin Street, Boston, Mass.
Arthur R. Sharp, Treas.; Thomas G. Cox, Agent

Southern Office, Greenville, S. C., Edwin Howard

Works at Taunton, Mass.

Quite a difference in your plant, when walls and ceilings are covered with Rice's Gloss Mill-White

An advertisement written by our customers

"We are indeed astonished to note the vast amount of daylight created by this paint—especially where we were formerly forced to use electric lights all day. We now find it entirely unnecessary. Agreeably surprised to observe how easy it is to keep clean."
Knotair Hosiery Co., Philadelphia, Pa.

"The difference in appearance is almost beyond imagination. The same gloss and whiteness remain to this day."
Greylock Mills, North Pownal, Vt.

"Have used your '*Mill White*' quite extensively, not only in this plant, but in others in which the writer has had the management. Has been entirely satisfactory."
Boott Mills, Lowell, Mass.

"The best thing we know of."
H. Doherty Silk Co., Paterson, N. J.

"Out of six comparative tests, Rice's Mill White leads."
Killingly Mfg. Co., Killingly, Conn.

RICE'S GLOSS MILL-WHITE

These letters are only a few of hundreds we have received.

Rice's is the original "mill-white." All others are imitations. It is the *only* gloss paint which contains no varnish. For that reason, we *guarantee* that if Rice's does not remain white longer than any other gloss paint—applied at the same time and under the same conditions—we will give, free, enough Rice's to repaint the job with one coat. We also guarantee that, properly applied, Rice's will not flake or scale. You cannot lose under this guarantee.

Sold Direct From the Factory

Rice's Mill-White is sold direct from the factory, in barrels containing sufficient paint to cover 20,000 square feet—one coat.

Send for Sample Board and Booklet, "More Light"

U. S. GUTTA PERCHA PAINT CO.
29 Dudley St., Providence, R. I.

On concrete surfaces

On inside concrete, Rice's Granolith makes the best possible primer for a second coat of Rice's Gloss Mill-White—giving a tile-like enamel finish at no more expense than lead and oil paint.

Rice's Granolith

Parks' Piping Parables

We have suggested using sprinkler piping as a part of a heating apparatus.

Anything to save first cost, space and fuel ought to be boosted.

So we boosted with the result that we are starting the second job of this sort.

Combining the heating and the sprinkler apparatus is a sort of paradox.

We shall tell you about our first installation:—done for the Worcester Building Trust at Worcester, Massachusetts.

This building, eight floors and a basement, was originally laid out for vacuum steam heating system with an estimated heating surface of 20,000 square feet.

The saving by the new method is obvious, as we have put in but a little over 8,000 square feet.

The balance of the heating surface is in the sprinkler pipes.

There is one six-inch sprinkler riser supplying about 1700 sprinkler heads. There are two circulating pumps, and two large expansion tanks in the vent house on the roof to take care of the contracting and expanding water.

The two boilers generate steam, heating the water in a large service heater for which there are two supplies, one to the sprinkler riser and the other to a five-inch heating riser which goes to the top floor, spreads out at the ceiling and distributes downward through eighteen drops to which 254 radiators are attached. Valves at the top and bottom of these risers make it possible to cut out any one section for repairs.

The sprinkler laterals from the cross mains, one and one-half inches in size, are maintained to the side wall of the building.

These laterals are joined at the side walls in six different groups, and each group is connected to the sprinkler drops with one main valve.

The system makes possible several combinations: It will circulate by gravity; either one or both circulating pumps may be used.

Either or both heating boilers may be used, and the temperature of the outgoing water actuates an automatic damper regulator to maintain any desired temperature.

The auxiliary system of radiation or the sprinkler heating surface may be used entirely independent of each other, in neither case interfering with the regular operation of the sprinklers as sprinklers.

Each tenant may shut of radiators or the sprinkler surface without interfering with the operation of the rest of the heating system or without interfering with the functioning of the sprinklers.

The boilers are of cast iron, but are not under static pressure from the water. If this feature is necessary, steel boilers may be installed.

In mill practice, one way would be to install a "save all" heater to which drips, exhausts and other waste heat units might be entrained.

The arrangement of valves throughout the system enables any break to be easily isolated and repaired.

The principle advantages of this combined system are as follows:

A reduction in cost to the owners.

While it would not invariably reduce the price, this combined system might well be considered on account of much less operating cost.

No system of heating can compete in economy with forced circulation of hot water, because it is the only direct system of heating which permits of central regulation, the waste incident to overheating being reduced to a minimum.

One man who is in charge of the coal consumption has absolute control over the outgoing water temperatures and the speed of the circulating pumps; and he is able to give a better and more uniform result throughout the plant than by promiscuous shutting-off and turning-on of heat in a steam system.

The amount of piping is minimized and space saved through lesser radiating surface.

Another argument favoring this combined system lies in the sure test of putting one's hand on each pipe. Should one of the pipes be plugged it would not heat.

Again the circulation of this water through sprinkler pipes will prevent freezing and in many cases do away with expensive dry pipe valve installations.

Objections has been raised that the circulation of water would deteriorate the pipes, but we provide against this by the use of the large expansion tanks so that the amount of new water admitted to the system in the course of a year should be inconsiderable.

Objection to this system has been made that should a sprinkler head go off, discharging hot water on an operative, burns would result.

Paradoxical again—this is not so.

The spraying effect of a sprinkler head sub-divides the water into such minute particles that the heat it contains is absorbed by the surrounding air.

When this water gets to the floor, it has lost its heat on the same principle as that involved in the use of spray nozzles in certain condensing engine plants for cooling the injection water.

PARKO

The G. M. Parks Company, Fitchburg, Massachusetts

The Problem of Humidification—Plus

If the mere delivering of pulverized or vaporized water into a mill constituted the problem of humidification, then indeed it would be easy.

But there are other phases.

Humidification and heating are so closely allied—have so much in common—that we like to approach the two problems as one.

If, in addition to these, you consider the subject of ventilation and air-cleaning as accessories, then the whole matter is so closely interwoven, the one subject with the other, that they become really one engineering problem.

One of the very best combinations for economy, both of original installation and future operating cost, is the Parko System of Hot Water Heating—and the Turbo Humidifier.

By means of this combination it is usually possible to combine operating methods for the two systems in such a way that you are usually saved the operating price that attaches to one—that is to say, we make heat units do a double duty.

As I say—usually.

This is not always possible. Where it is not, we tell you so frankly and give you the benefit of forty-one years of piping engineering experience.

As to air-cleaning and ventilating, these are more and more recognized as a part of the textile mill problem. On the air-cleaning we are among the pioneers. Ventilation we treat as an individual subject—dealing with each case as the conditions suggest.

What we have to sell them is not humidifying—not air-cleaning—not heating—not ventilating—but an engineering and practical knowledge of all these as they combine in each case.

By doing this we save you money and give you—we say it not too boastfully—give you we think, better results on a combined problem of this sort, at less cost than you can get by splitting up the several orders.

Our slogan for a good many years was, We don't do a thing but piping. That has had to be changed somewhat, because we now do a good deal of planning and thinking on paper—before we do the piping.

We are piping engineers—and contractors; engineers only on these special problems that we have made a specialty of and which in no way conflict with the arrangements with your own mill engineer or architect.

We like to work with him—usually do on new work.

In old mills we are able many times to effect noticeable coal-saving results by changes in heating and process piping that pay for the work of installation in four, three or even two years.

We want to tell you of the service that we have to sell.

The G. M. Parks Company is a service house—in all you may read into that word.

We believe we get what we give. "The humidifier with the guarantee" echoes this sentiment and is typical of our platform in all our departments.

If you have a problem of humidifying—air-cleaning—heating—ventilating—or a combination of all four, we ask a chance to save you money.

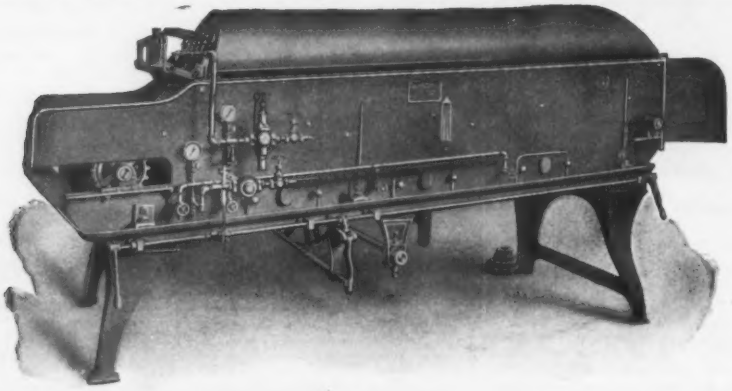
The G. M. Parks Company

Fitchburg, Mass.

Southern Office, 200 Commercial Bank Building, Charlotte, N. C. **J. S. COTHRAN, Mgr.**

The Yarn Conditioning Machine

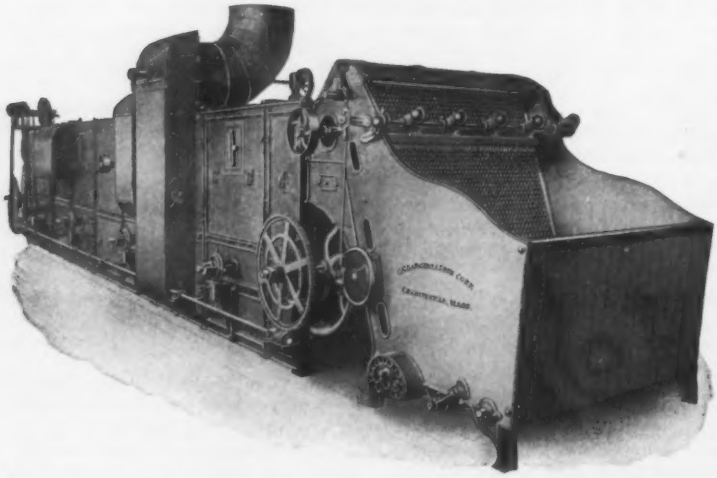
Sets the twist in your filling and overcomes kinky filling difficulties. It conditions without injuring the bobbins



The Sargent Drying Machines

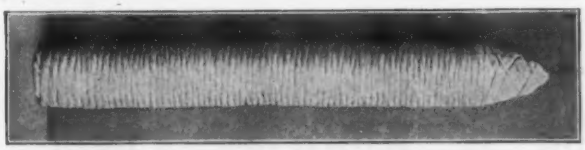
Metal Construction
Asbestos Insulation

Scientifically designed for greatest economy in drying Cotton, Wool, Hair.



Wool Washers, Wool Dusters and Openers, Burr Pickers
Complete Carbonizing Plants
Automatic Feeds for Cotton and Wool

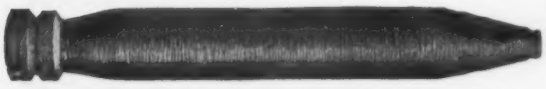
C. G. Sargent's Sons Corp., Graniteville, Mass.



No. 2

No. 1 and No. 2—Cops to weave from inside seven-eighths to three inches diameter and up to seventeen inches long. Suitable for various kinds of coarse goods such as grass matting, cotton bagging, cocoa matting, all kinds of carpets, felts, chinchilla, linen, jute, flax, asbestos, hose and narrow fabrics such as wicks, belting, webbing, surcingles, halters, etc.

No. 3 and No. 4 Shuttle Bobbins from seven-eighths to two inches in diameter and any length up to twelve inches. Suitable for all kinds of duck, upholsteries, tapestries, asbestos, ratana or any kind of fancy yarns for automatic or other looms.



No. 1 No. 4 No. 3

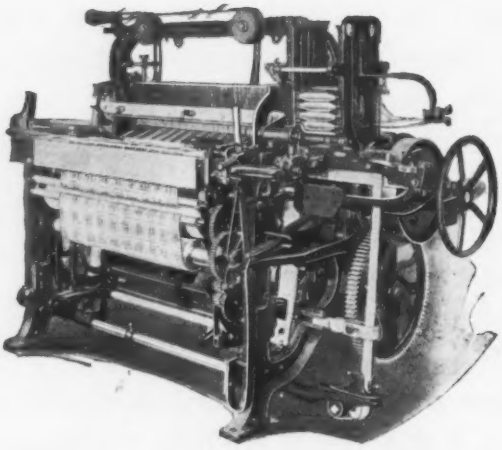
OSWALD LEVER CO., Inc.

Lehigh Avenue and Front Street, Philadelphia, Pa.

Builders of Textile Machinery

WINDERS ESPECIALLY

Crompton & Knowles Loom Works



Automatic Gingham Looms

One of our latest productions for weaving goods of two or more colors in the filling. Like every loom we build, it has the advantage of a successful mill test.

WORCESTER, MASS.

Providence, R. I. **Philadelphia, Pa.**

Southern representative, ALEXANDER & GARSED, Charlotte, N. C.

OUR NEW

Hand-Threading Shuttle

Is the Simplest—Most Effective and Most Quickly Threaded Shuttle Made

NOTE THESE POINTS:

¶ Can be operated with the finest silk or the coarsest filling.

¶ Will neither unthread nor "balloon."

¶ Provision is made for easy removal of lint that may accumulate in the threading device.

¶ There is room for the insertion of felt for tension purposes.

¶ It complies with the Massachusetts sanitary shuttle law, and as other states are likely to enact similar laws, it is well to anticipate trouble by adopting this new shuttle.

Trial orders solicited.—Satisfaction guaranteed.

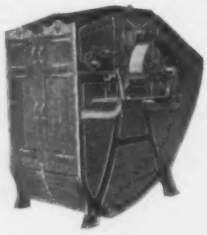
Paper Cop Tubes
Cones and Shells
Send your samples and we will quote prices on any lot desired

Shuttles and
Shuttle Irons
For All Textile Purposes

American Textile Specialty Machinery Co.

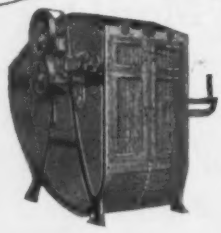
670 Eddy Street - Providence, R. I.

13th Street and Boulevard, Long Island City



The Hunter

NO. 10
FULLING
MILL



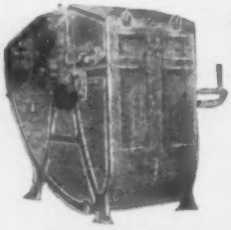
DRIVING SIDE

GEAR DRIVE

CLOTH WASHERS

PEICE DYE
KETTLES

SOAPING
MACHINES



BELT DRIVE

ROPE DRIVE

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

ECONOMY AND SAFETY

YOU GET BOTH WITH

"Hurricane" Machinery

FOR

HOSIERY
SKEIN
YARN
SLUBBING
etc.

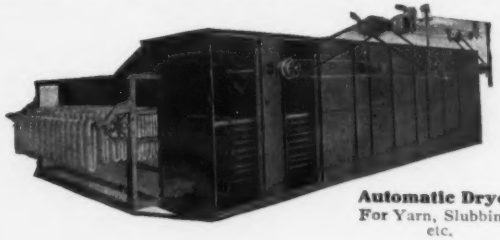
The best and mosteconomical Dyeing Machines

BETTER DYEING at LESS EXPENSE

—

Give us an opportunity to prove our claims

"Hurricane" Circulating Dyeing Machines are built in various sizes and types



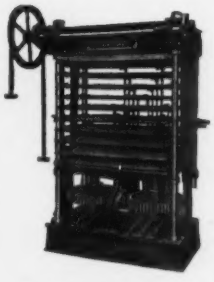
Automatic Dryer
For Yarn, Slubbing, etc.

Complete Equipments for

Dyeing
Scouring
Bleaching
Carbonizing

FIRE-PROOF DRYERS

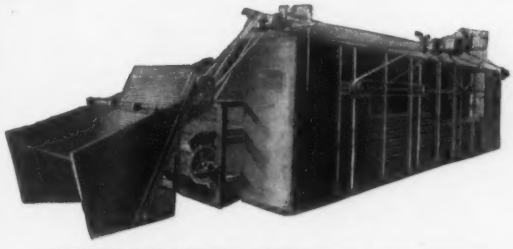
STEEL CONSTRUCTION
INSULATED WITH ASBESTOS



Power-Screw and Hydraulic
PRESSES

Fans

Motor and Belt Driven



AUTOMATIC STOCK DRYER
(With Sectional-Continuous Conveyor)
For Cotton, Wool, Hair, Rags, etc.

THE PHILADELPHIA DRYING MACHINERY CO.

Main Office and Works: 6721 Germantown Ave., Phila., Pa. **Boston Office: 53 State Street**

Bringing in the Evidence

Garment Makers' Truck Never Out of Commission

Huntington, W. Va., Aug. 29, 1914

The Reo Truck which we have in use, and which we purchased from you, is in splendid shape. With it we are doing the work which required one team all the time and an additional team part of the time, and the work is being gotten out much more promptly with the truck than it was formerly.

It has never been out of commission a single day since we purchased it over a year ago. WATTS, RITTER & CO.

Manufacturers of Peerless Overalls, Shirts and Pants, and Jobbers of Dry Goods.

Paying for Itself Hauling Builders' Supplies

Far Hills, N. J., Aug. 27, 1914

The Reo Truck purchased from you about three months ago is giving perfect satisfaction, taking the place of four or five horses and giving no trouble whatsoever. We find that the cost of upkeep has been very small in comparison with what we expected before we purchased the truck. It has already saved us considerable money towards the purchase price that we paid for it. We feel that perhaps we could be persuaded, without a great deal of effort, to purchase another of the same kind. L. V. LUDLOW & CO.

Coal, Lumber and Builders' Supplies

A Satisfied Builder

Paterson, N. J., May 28, 1914

Replying to your favor of May 22nd, in regard to the Reo Motor Truck, which we purchased some time ago, we take pleasure in stating that we have been using this truck for a number of months, and have found it very satisfactory in connection with our work and will recommend same to any one who is desirous of purchasing a truck of this description.

THE DAVID HENRY BUILDING CO.
Per S. Williams, Secy. and Treas.

Giving Exemplary Service—Will Install Another Model J

Bristol, Va.-Tenn., Aug. 10th, 1914

We have had a Reo Model J, two-ton truck in continuous service since March, and are making an average of 48 miles per day with it in our delivery. The oil and grease consumption has been very light. Our average load is from 2000 to 3000 pounds. We have had no trouble whatever, and have not spent a cent for repairs. It has been doing our work to our satisfaction, and in all probability we will put another one of these trucks in service next spring.

BRISTOL ICE CREAM CO.
By A. E. Fuller

THE thousands of merchants who have found the solution of their hauling and delivering problems in the Reo two-ton truck were doubtless one-time skeptics.

Quite possibly they once looked askance at its claimed superiorities—the saving in time, the efficiency it adds to every department of the business, and its ability to key up an entire institution to a quicker step.

But once tried, and personally compared with the old-fashionedteam-hauling, these Reo truck owners are of one voice in their testimony.

The verdict is unanimous. In over 175 lines of business, the Reo truck has become a permanent factor of efficiency and economy, and its well earned fame has made it the leading two-ton truck, in point of sales, in America.

It is no source of surprise that merchants everywhere, benefited by the Reo, should express their satisfaction, without reserve; and their experience should have the utmost weight with intending purchasers of motor trucks.

REO MODEL J

Two-Tons Capacity

$1650

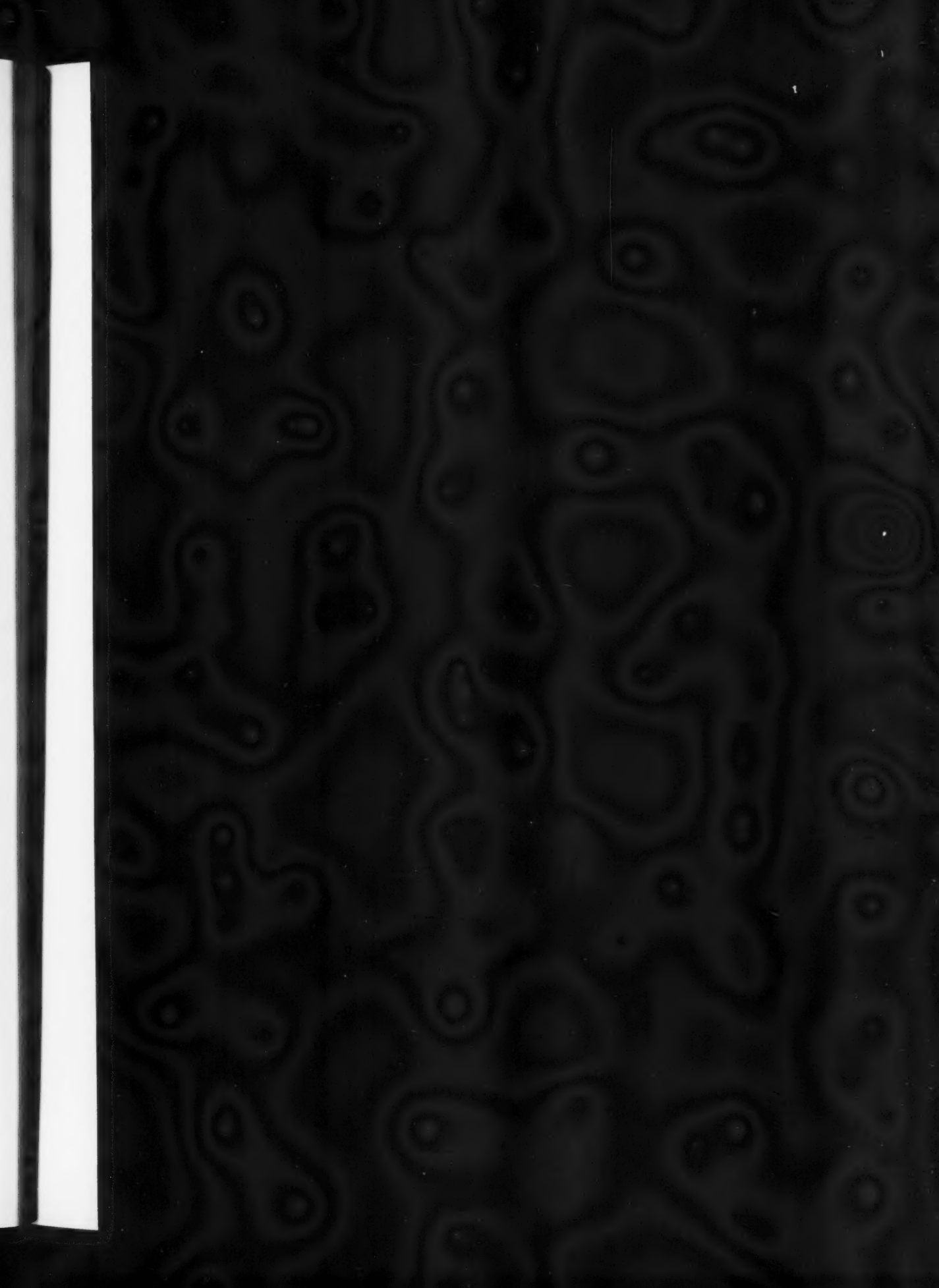
F. O. B. Lansing

Chassis with Driver's Cab, Body Extra

Write for catalog and booklet of users' experience

Reo Motor Truck Co.

Lansing, Mich.



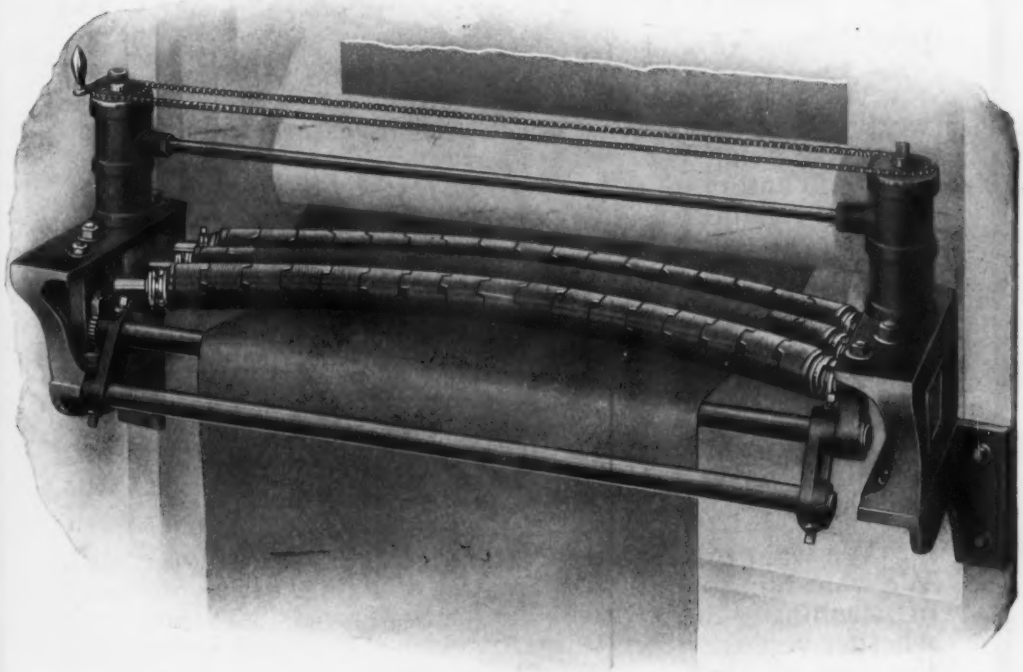
THOMAS LEYLAND & COMPANY

F. T. Walsh, Manager

60 India Street, Boston, Mass. WORKS AT READVILLE, MASS.

Sole Manufacturers of THE WILLIAM MYCOCK

Improved Regulating Cloth Expander



Expander attached to Calendar showing Regulating Motion and Adjustable Tension Bars

This Expander and its improved features are fully protected by basic United States patents, under which the builders will maintain their patent rights against any who may violate such rights by building, selling or using machines of this character.

Scutchers, Sewing Machines, Open Bleaching Machines, Blanket Washers for Calico Printers, Guides, Etc.

Starch

THE particular case of your own mill needs careful study to determine what starch is best suited to *your* SIZING and FINISHING problems.

We have reduced the manufacture of starches for textile work to a science by years of factory investigation and laboratory research. We are ready to take up the special case of your mill and point out to you what starches are most adaptable and reliable for your purposes.

Six years of careful investigation of conditions in the cotton mills of the country has taught us the needs of the trade.

Six years' research in the best equipped Starch Laboratory in America has put us in touch with starch chemistry.

Six years of manufacturing, with cotton mill problems in mind, has produced our special Brands of Textile Starches.

We want to send our special starch expert to your mill. We want him to go into the matter of sizing with your boss of slashing—check up your sizing processes—find out whether you are now using the starches that will insure you the most efficient and economical results.

This special starch expert service is absolutely free—send us a sample of the starches you are using. We will give you an exact analysis of them and send our practical man to study your needs. Write a letter now to our Mill Starch Department.

Corn Products Refining Company
NEW YORK

Starch

LANE

Canvas Mill Baskets Boxes and Trucks

FIG. 22.

Round Taper Style with Renewable Hardwood Shoes.
The Ideal Waste Basket. Made also without wooden shoes.

Increase Dividends Through

Less Waste **Lighter Weight**

Longer Life

Lower Ultimate Cost

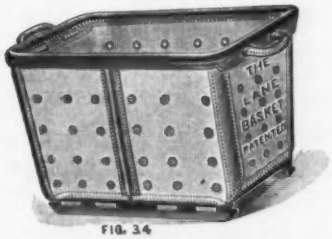


FIG. 34

Oblong Taper Style.
A Steaming Basket with Great Durability and Quick Steaming Qualities.
Made in shape or size to fit any steam box.

A STYLE FOR EVERY USE

W. T. LANE & BRO., Mfrs.

POUGHKEEPSIE, N. Y.

The Supreme Motor for Textile Mills

Westinghouse Electric Type CS

THIS new motor, now on the market after drastic factory and service tests lasting over three years, represents the most advanced design for textile service. Some of its special features are:

Forged steel construction, insuring great strength with minimum weight.

Efficiency higher than that of any other line of motors on the market.

Very large air gaps.

Bearings especially designed for textile service.

Rotor practically indestructible.

Primary coils form wound and laid in open slots in sizes above 5 h. p.

Readily adapted to special textile applications.

Made in all commercial sizes and speeds for all commercial polyphase circuits.

Westinghouse Electric and Mfg. Co.
EAST PITTSBURGH, PA.

BOSTON
Boston Safe Deposit and Trust Building

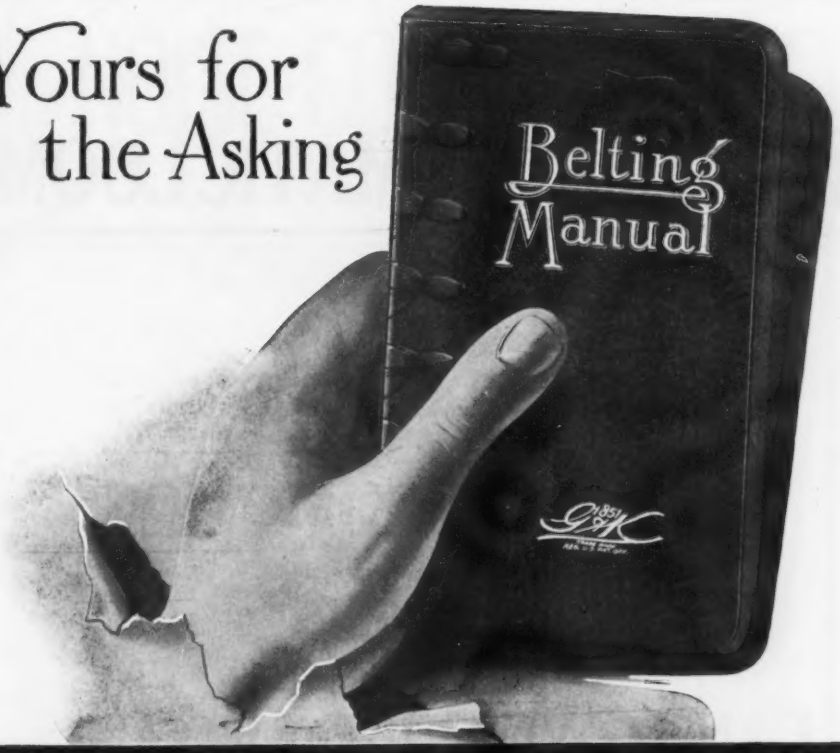
NEW YORK
165 Broadway

PHILADELPHIA
North American Building

CHARLOTTE
American Building

ATLANTA: Candler Building

Yours for the Asking



SHOULD BE IN THE HAND OF EVERY BELT USER

The "*Belting Manual*" gives you in a nut-shell all the information you need about Belt Transmission.

It gets right down to rock bottom principles—every one of its 96 pages is a veritable nugget of invaluable information, suggestions, mechanical rules, tables, etc. In fact, the "*Belting Manual*" is the most complete and authentic book of its kind—a book you cannot afford to be without. You will want to use it every day. Just one little hint may save you hundreds of dollars. Worth while?

Send for a copy and keep it handy for immediate reference. Use the coupon or your letterhead. The book will be sent post-haste and post-paid.

The Graton & Knight Mfg. Co.

OAK LEATHER TANNERS AND BELT MAKERS

WORCESTER, - MASS.

BRANCHES

Atlanta, Boston, Chicago, Cleveland, Detroit, Fall River, Kansas City, Milwaukee, Montreal, P. Q., New Orleans, Minneapolis, New York, Philadelphia, Pittsburg, Portland, Or., San Francisco, Seattle, St. Louis

Selling Agents for Texas. The Graton & Knight Mfg. Co., of Texas, Dallas, Texas

COUPON T.W.R.-11-14

The Graton & Knight Mfg. Co.
Worcester, Mass.

Gentlemen: Send the "Belting Manual" post-haste and post-paid.

Name.....

Address.....

.....

Position.....

Company.....

"IDEAL" AUTOMATIC LOOMS

SILK LOOMS

DOBBIES, BOX MOTIONS

TEMPLES

FANCY WEAVING MOTIONS

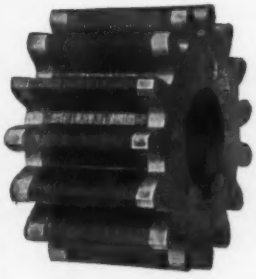
THE STAFFORD COMPANY

READVILLE, MASS.

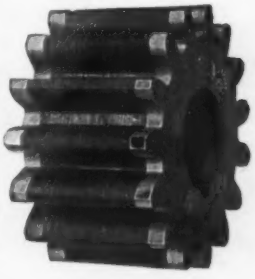
FRED H. WHITE Southern Agent CHARLOTTE, N. C.

NOI$E CO$T$ MONEY

This was the argument recently advanced by a prominent mill superintendent against the use of noisy machinery. As reported editorially in Metallurgical and Chemical Engineering this man's views were:



"Noise makes it difficult to give and receive orders, and undoubtedly causes many mistakes. The cost of noise may not be estimated exactly, but it is a real factor.



The worst offenders in these respects are noisy high speed gear drives, which can be quieted at small expense by installing

NEW PROCESS NOISELESS PINIONS

Improvement in human efficiency is but a small part of the resulting benefit, for quiet drives invariably indicate better mechanical conditions also.

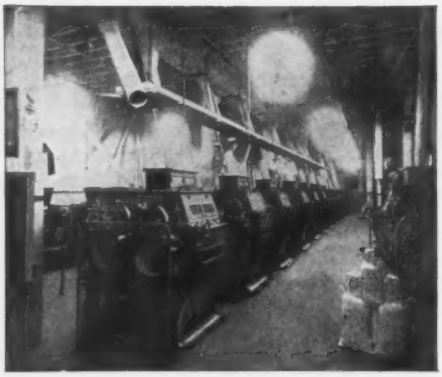
These and other important matters are explained in detail in our book, "Noiseless Gear Driving," which you should read.

NEW PROCESS IS TO ALL OTHER RAWHIDE AS STEEL IS TO IRON

N.P.R.H. NEW PROCESS GEAR CORPORATION N.P.R.H.

SYRACUSE, N.Y.

Canadian Agents Robert Gardner & Son, Ltd., Montreal 103



In this industrial plant artificial light of daylight intensity was required. It was secured with lamps which provide the best possible light—Westinghouse Mazdas.

When buying incandescent lamps consider—

The Quality of your Light and the Quality of your Production

Can any industrial plant manager deny that the best work will be done under the best light? Do you know of any factor which can do more harm to the quality of your production than poor light? It pays to buy

Westinghouse Mazda Lamps

which give the kind of light that insures the quality of your production that is turned out under artificial light. Westinghouse Mazda light is clean, white, steady and reliable—no flickering, no shadows, no uncertainty. With large improved Mazdas you can get daylight intensity throughout your plant without increasing the consumption of current.

The quality of your output is very important to you. It doesn't pay to take chances when you can use Westinghouse Mazdas and be sure.

Have you seen our book on Industrial Lighting? Send for a copy.

"Guaranteed by the Name"

Westinghouse Lamp Company

Atlanta	Cleveland	Los Angeles	Portland
Baltimore	*Dallas	Memphis	Salt Lake City
Boston	Denver	New York	San Francisco
Buffalo	Detroit	New Orleans	Seattle
Butte	*El Paso	Philadelphia	St. Louis
Chicago	Kansas City	Pittsburg	Syracuse
Cincinnati			

*Westinghouse Lamp Corporation

Distributers of McCandless Mazda Miniature Lamps

Pick Your Book

9 Expert Guides to Equipment Buying

The Mechanical Goods Department of The Goodyear Tire & Rubber Company has just published nine books—free—that deal in a scientific way with Belting, Hose, Packing, Valves and other service equipment for power plants generally.

The books are listed in the attached coupon. If you are interested in buying equipment made for specific service, or want to know how to increase the efficiency of your plant, select the book or books you want, mark the coupon as directed and mail it today. Books will go forward to you immediately, without any charge or obligation to you whatsoever.

GOODYEAR
AKRON, OHIO
Service Equipment

Selecting the exact equipment *first* and for all is real economy. These books help you do it. There is no guess-work—no breakdowns or loss of output through failure of inferior or wrong equipment.

These books will save you many a dollar in *service-economy*. They tell of equipment made by the world's foremost experts in this field. They tell how you can have these men confer with you at any time—how you can be assured of absolute safety in buying.

Act Now

These books mark a new era in equipment buying. Send today for those you need. Use the coupon. Do it NOW.

The Goodyear Tire & Rubber Co., Akron, O.
Makers of Goodyear No-Rim-Cut Automobile Tires

Mechanical Goods Department
The Goodyear Tire & Rubber Co.
Akron, Ohio

Send me, without charge or obligation on my part, the following books against which I have marked X:

Name .....
Concern .....
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..... 1955

- ☐ Paper Mill Book
- ☐ Flat Conveyor Belts
- ☐ Better Steam Hose
- ☐ Cement Plant Book
- ☐ Mine Equipment
- ☐ Balata Belting
- ☐ Saw Mill Belting
- ☐ Grain Elevator Book
- ☐ Packing and Valves

EFFICIENT WINDING

The only resource for productive results

Without our winding machine that winds direct from the skein there is excessive cost for winding.

The machine heretofore built and the bobbin used have had phenomenal success.

The LATEST WINDER will excel all our previous efforts.

The Automatic Winder is entirely new.

It is the future machine.

To wind yarn on to cones from the skein and eliminate all knots will produce greater results than from the bobbin.

The opportunity is open for you.

To prove it send us yarn to wind on to the cone and test it.

Personal inspection invited.

We are ready to accept your orders.

JACOB K. ALTEMUS,

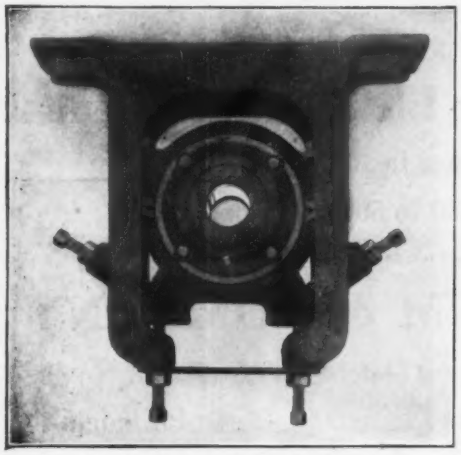
Textile Machinery.

2844 North Fourth Street, Philadelphia, Pa.

Winding, Spooling, Warping, Beaming, and Kindred Machinery with scientific knowledge of what is required.

Hess-Bright

THE HESS-BRIGHT HANGER
WITH THE
Can't-Be-Cramped Ball Bearing Box



Note Position of Adjusting Set Screws

Note the Universal Swivel

These two cuts show why the
New Hess-Bright Ball Bearing Hanger
Is the Hanger of Greatest Flexibility and Economy

(a) The set screw arrangement is such that no matter how tight the screws are set it is impossible to distort the box-body or cramp the bearing.

(b) The bearing and box can swivel within the holding form in any direction desired and does so in harmony with all shaft variations.

(c) No matter what the direction of the weight or pull on the shaft, there is no binding and the absolute maximum carrying capacity is attained.

The Hess-Bright Hanger is a Rigid, Flexible, Self-Aligning, Anti-Friction, Non-Binding, Ball Bearing Hanger

Send for Bulletin "Comparative Tests of Three Types of Lineshaft Bearings," read before the American Society of Mechanical Engineers.

The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Front Street and Erie Avenue, Philadelphia, Pa.

PHILADELPHIA, 666 No. Broad St. NEW YORK, 1974 Broadway CHICAGO, 1800 Michigan Ave.

Don't Worry About Dyestuffs

Bleach Your Stockings

WE ARE

Headquarters for Bleaching Equipment

Machines in All Sizes

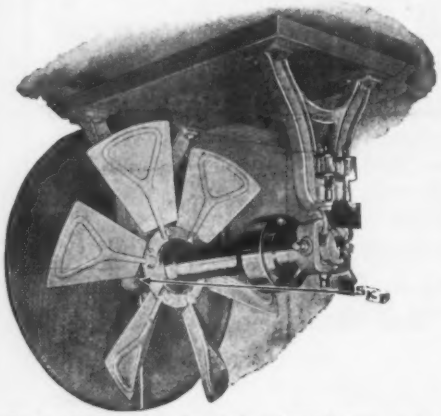
Capacity from 50 to 500 lbs. per batch.

For detailed information address Dept. H. of

SMITH, DRUM & COMPANY

"Builders of the Best" Labor Saving Devices

Coral and Cumberland Streets - - Philadelphia, Pa.



Drying Machine Fan Mounted on S K F Ball Bearings
This type of fan approved by Fire Insurance Underwriters

Be Sure That Your Dryer Fans Run On Ball Bearings

These fans run constantly, the power consumption amounts to a big item in the course of a year.

If you do not frequently oil and inspect plain bearing fans, the power consumption will run up.

With S K F Ball Bearings on fans you save 25 per cent or more of the power.

These bearings require lubrication and attention but once in three months.

SAVE POWER, AVOID BEARING TROUBLE

Specify SKF Ball Bearings on Your Dryers

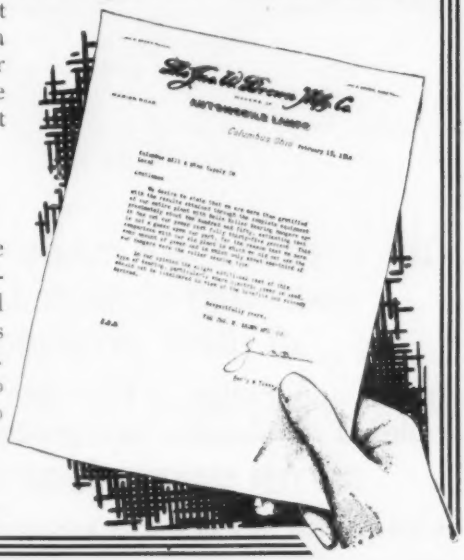
Send for Bulletin No. 14-M

SKF BALL BEARING CO.

50 CHURCH STREET - NEW YORK

What *User* says to *User*

SUPPOSE John Smith is a friend of yours, and you have faith in his mechanical judgment. Suppose you want to buy a car, and he says, "Jim, get a So-and-So—nothing like it. Had mine for years." And suppose he were to elaborate on this and tell you real facts. Wouldn't you feel a lot safer in buying?



"Sells" Roller Bearings

are sold that way in many cases—proof in the letter herewith. And it's pretty safe to assume that no American business man will tell another to buy something unless he is *very sure of its merits*. Read what John B. Brown has to say—then drop us a line so that we can give you a closer view. No obligation.

ROYERSFORD FDY. & MACH. CO.
56 North Fifth Street - - Philadelphia, Pa.

Staunchness and Dependability

The Paramount Knitting Company of Waupun, Wisconsin, combed the market for a truck that would best meet its needs for prompt and reliable delivery to its trade. Its selection of the KisselKar Truck was determined after every well known make in America was investigated—as to material, design, workmanship and *record in service*.

KisselKar Truck owned by the Paramount Knitting Company of Waupun, Wisconsin

KISSELKAR TRUCKS

If, after careful analysis, we can satisfy *you* that KisselKar Trucks will save money in *your* business, we will feel that we have earned the right to solicit your order.

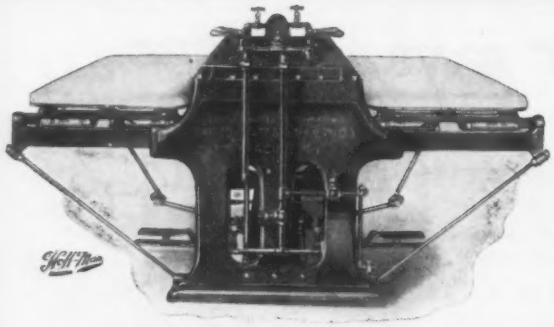
If, on the other hand, we cannot show you in figures that trucks will benefit you, we will advise you, not only not to buy, but just why you shouldn't.

KisselKar Trucks are built in six sizes—1500 lbs., 1, 1½, 2½, 3½ and 6 tons—bodies to suit. May we investigate your haulage system?

Let us refer your name to our nearest agent. At the same time we will mail you our truck portfolio with 350 illustrations—it's worth looking over.

KISSEL MOTOR CAR CO., 528 Kissel Ave., Hartford, Wis.

Boston, New York, Chicago, Milwaukee, St. Paul, Minneapolis, Dallas, Kansas City, San Francisco, Los Angeles, Cleveland, Detroit, Philadelphia, Pittsburgh, Rochester, Seattle, Baltimore, and 300 other principal points.



HOFFMAN FFF MODEL PATENTED

UNDERWEAR PRESSING

Becomes a perfect and highly satisfactory accomplishment when one of the well known Hoffman Underwear Presses is used.

Our Presses are made in three sizes, all of them constructed on the same principle. Either of them produce unexcelled results

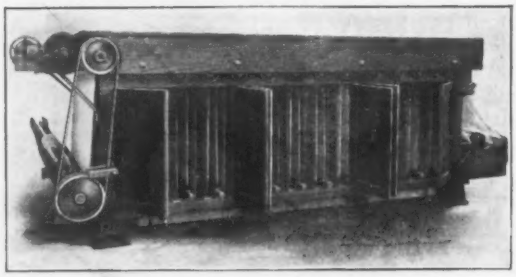
Direct application of HOT DRY STEAM as applied by a Hoffman renders all classes and grades of Underwear more marketable

BETTER MAKE INQUIRY and BEWARE OF INFRINGERS

UNITED STATES HOFFMAN CO., SYRACUSE, N. Y.

Manufacturers Cooling and Conditioning Machine

(PATENTED)



Does away with shadiness caused by uneven cooling. Quickly and permanently restores finished cloth *to its natural* condition.

INDISPENSABLE to every TEXTILE MANUFACTURER

Write for particulars

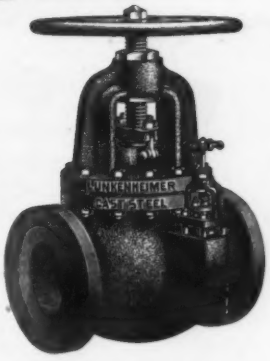
MANUFACTURERS MACHINE COMPANY

660 Essex Street, Lawrence, Mass.

Selling Agents: Edward Jefferson & Brother, 123 So. Second St., Philadelphia, Pa.

LUNKENHEIMER

CAST STEEL VALVES



The Lunkenheimer line of Cast Steel Valves consists of Globe, Angle, Cross, Gate, Throttle, Non-return Boiler Stop, etc., made in all standard sizes and two combinations as regards the material used for the trimmings, in order to meet various conditions of pressure and superheat. Also made in "*Puddled*" *Semi-steel.*

All of the above together with Check, Lever, Pop Safety, Relief, Blow-off, Screw-Down Check Valves, etc., are furnished in *Bronze* or *Iron Body Bronze Mounted.*

The Large and complete line of Lunkenheimer high grade engineering specialties also includes Water Columns, Gauges and other Boiler Mountings, Whistles and Ground Key Work in great variety; Injectors and Ejectors; Lubricators and Lubricating Devices; Oil Pump, Oil and Grease Cups, Gasoline Engine Appliances, etc. Your local dealer can furnish them; if not, write us. A complete description of the entire line can be had by referring to Lunkenheimer Catalogue No. 50. Write for a copy.

THE LUNKENHEIMER CO.
"QUALITY"

Largest Manufacturers of High Grade Engineering Specialties in the World

New York Chicago **CINCINNATI, OHIO** Boston London 15-54c

A Visit to the Power Plants

of the largest and best known manufacturers in the country will show you that

Goulds Power Pumps

are the choice wherever engineers are employed to keep down maintenance and operating costs and to insure uninterrupted service. That's why such concerns as

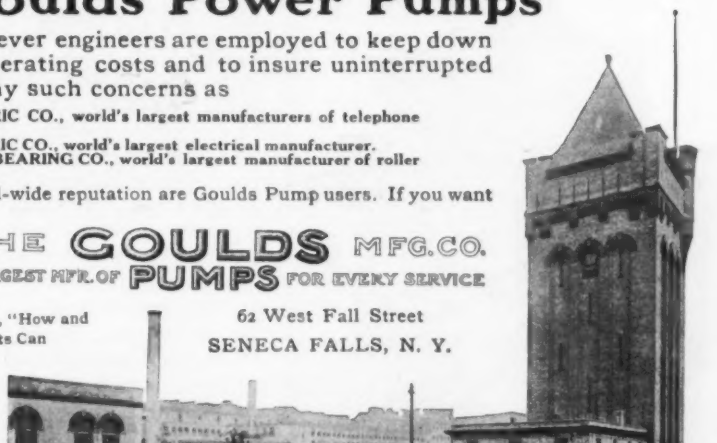
WESTERN ELECTRIC CO., world's largest manufacturers of telephone apparatus.
GENERAL ELECTRIC CO., world's largest electrical manufacturer.
TIMKEN ROLLER BEARING CO., world's largest manufacturer of roller bearings,

and many others of world-wide reputation are Goulds Pump users. If you want the same pump service these manufacturers get, all you need do is to specify "Goulds."

THE GOULDS MFG. CO.
LARGEST MFR. OF PUMPS FOR EVERY SERVICE

62 West Fall Street
SENECA FALLS, N. Y.

Ask for a copy of our book, "How and Where Pumping Costs Can Be Reduced."



Partial view of the 156-acre Hawthorne, Ill., plant of the Western Electric Co., largest manufacturers of telephone apparatus in the world

BIRCH BROTHERS

ALBERT BIRCH TEXTILE MECHANICIAN

SOMERVILLE, MASS.

Starch Mangle.—This is the two-roll machine, with brass and rubber rolls. Mangles built with rollers of any material or number desired. Send for circular.

BIRCH TREE

"Coronation"

Piece-End

Sewing Machine

Sent on trial most anywhere

Sews any fabric, thick or thin, wet or dry, without change

Fine Stitch or Coarse Stitch

Send for Circular

Also Makers of

Dyeing and Finishing Machinery

Scutchers, Openers, Folders, Crabbing and Soaping Machinery

THE NEW OSWEGO METHOD

FOR BOTH STRAIGHT CUTTING AND PINKING SAMPLES

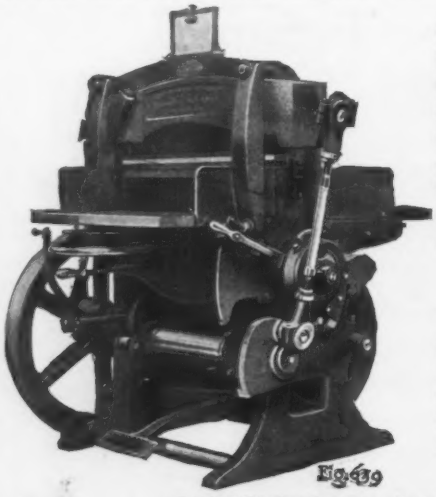


Fig. 639

at a great economy of time and cloth is possible on the NEW OSWEGO AUTOS, equipped with back gauge size duplicating attachment and any length of iron back table desired, and other equipment especially adapted to each case for the most rapid production. The instant adoption of the OSWEGO Cutters by many progressive American firms indicates their success on all kinds of textiles, etc.

Thirty-five stock sizes and styles, from 19 in. to 84 in. (larger sizes to order), enable you to select any size or style or price OSWEGO you desire. Each OSWEGO Cutter is guaranteed and the best producible. For Paper, Board, Cloth, Foil, Celluloid, Leather, Etc., Etc.

OSWEGO MACHINE WORKS

NIEL GRAY, Jr., Proprietor

OSWEGO, NEW YORK

Shall We Do It?

We Can—If We Will

IT has been said that with all Europe at war "America must now shoulder the world's work."

The terrible war now raging has drawn from the fields and factories of Europe the workers who have supplied not only their own countries, but the rest of the world, with some of the necessities and luxuries of life.

The condition has been heralded as an unprecedented and never-to-be-expected-again opportunity for this country and all sorts of predictions have been made as to the ultimate commercial gain for the United States.

In that case, the textile industry, the greatest in this country may have to increase its output, and consequently, be forced to increase its capacity and manufacturing equipment.

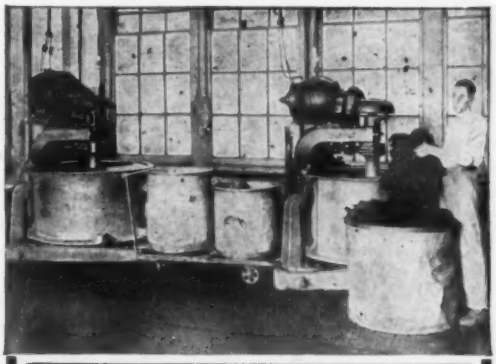
As a result those making textile machinery, factory equipment or supplies will benefit by an increased demand for their products and those who will derive the greatest benefit are the ones whose names and product are best known to the buyers in textile mills.

And if you make machinery, equipment or supplies usable in textile mills you can reach the men who have authority to buy your product through the medium that specializes on this end of the industry, the Textile World Record.

Of the Textile World Record's 400 regular advertisers over 100 sell machinery, mill equipment or supplies not advertised in any other textile periodical.

Textile World Record

144 Congress St., Boston, Mass.



Raw Material or Finished Product

is handled with equal success by Schaum & Uhlinger Centrifugals.

These two pictures show three S. & U. Machines in the plant of the greatest hat manufacturers in the world. The two 42" Type E machines above are used to dry felt from the dyeing and washing processes. The

Schaum & Uhlinger Centrifugal Extractor

pictured below extracts the water from the hats coming from the shrinking process.

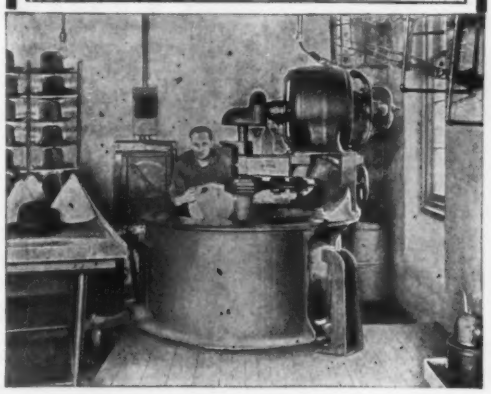
This great manufacturing Company is but one of 1500 prominent firms who find economy and increased production through the use of S. & U. Machines.

Such far reaching endorsement and use should have great weight in determining *your* choice of hydro-extracting machinery.

Your copy of "Centrifugal Extraction" will be sent immediately without obligation.

Write for it today.

Schaum & Uhlinger, Inc.
204 Glenwood Avenue, Philadelphia



Paragon Apron Oil Union Apron Oil

The condition of Aprons or Rub Rolls
is a matter of the greatest importance

PARAGON AND UNION APRON OILS keep the aprons or rub rolls soft and pliable. They not only tend to increase production but make a smooth roving.

BORNE, SCRYMSER COMPANY

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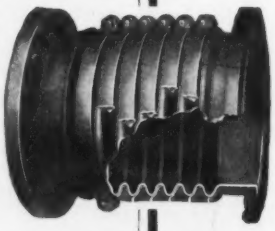
The New Badger Expansion Joint Saves Time and Trouble



Here's an expansion joint for steam, gas, or water pipe lines which is low in first cost, is absolutely reliable, never requires packing, and lasts a life time. It is made of corrugated copper with equalizing rings to insure each corrugation taking its share of the expansion. Made in all sizes and for any pressure.

Send now for our new catalog showing construction and giving description and result of exhaustive tests.

The E. B. Badger & Sons Company

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RELIANCE CLOTH HANGING MACHINE

For shrinking woolen, worsted and cotton goods; drying oilcloth, or waterproof cloth, and curing rubberized cloth.

Can be attached to any machine or operated separately

In use by the United States Quartermaster department for shrinking uniform cloth.

Write for catalogue and prices

Reliance Machine Works

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American Moistening Company

120 FRANKLIN STREET, BOSTON, MASS.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

"SIMPLICITY AND ORIGINALITY OF DESIGN"

Is the largest manufacturer of HUMIDIFIERS in the world. The last twenty years receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

The Only Perfect System of Air Moistening

Has Been Adopted by the Representative Manufacturers of this Country.
The only System adopted in the Textile Schools. Write for booklet "T" on Humidification.
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Latest and most approved methods of

POWER TRANSMISSION
by
BELTS, ROPES OR GEARS

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Salem, Mass.

Elevators Especially Adapted for Textile Mills

Protect Yourself Against Liability Laws

We make a specialty of attaching to Elevators, already in use, Automatic Folding Hatch Doors, Semi and Full Automatic Gates, Automatic Locking and Stopping Devices, Automatic Car Safety Attachments, etc.

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Belt, Engine and Motor Driven

Sizes 12" to 72"

Dye Tubs and Tanks

Reel Dyeing and Bleaching Machines

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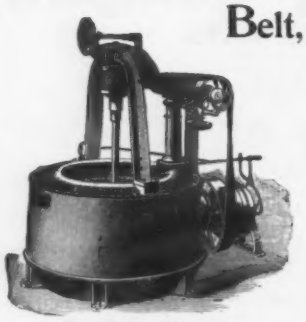

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HAS STOOD THE TEST OF YEARS

Sole Agents for U. S. A.

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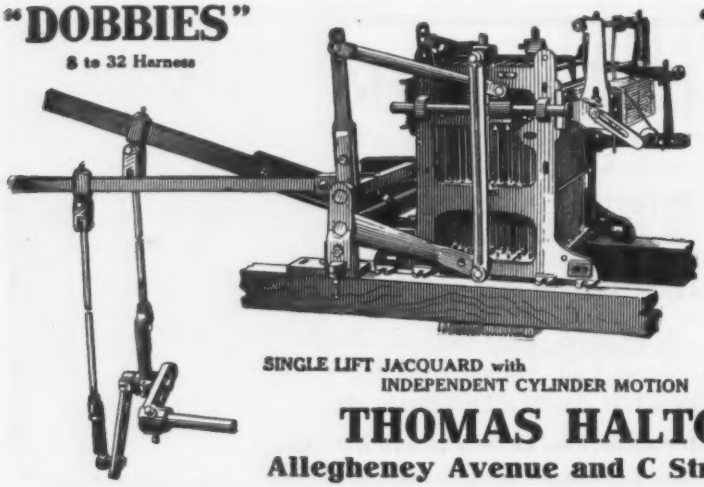

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208 to 2608 Hooks

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THOMAS HALTON'S SONS

Allegheney Avenue and C Street, Philadelphia

In 1843

One man in a small shop

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All these years manufacturing

Power Transmission Machinery

That Satisfies and Wears Well

The American Tool & Machine Co.
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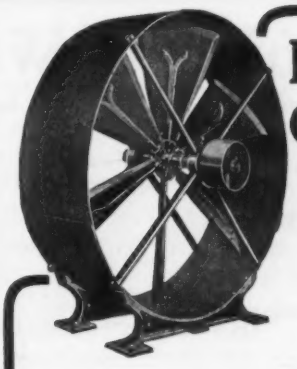

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Mean Satisfied Users—Here's Proof

Cumberland Mills, Me.

MESSRS. B. F. PERKINS & SONS,
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Dear Sirs:—We continue to use your ventilating and exhaust fans in our mills and have always found them satisfactory; we usually order of you without considering any other make, and feel that we are safe in so doing. Very truly yours,

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Perkins Fans Satisfy

Perkins Fans are built for durability and efficiency. Adjustable blades regulate the draught to your needs in different seasons or conditions.

If you can use a strong, high speed, noiseless fan backed by years of expert experience—

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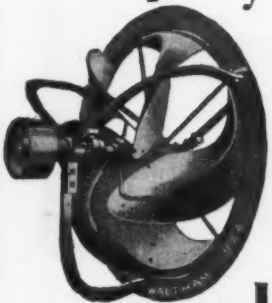
B. F. PERKINS & SON, INC.
HOLYOKE, MASS.

Dye House Ventilation



DAVIDSON FAN
Probably the most widely used fan in the world.

How Are Your Conditions?

Dye House Ventilation is a difficult problem. We have solved it for many others. May we not help you?

Good Conditions Attract Good Workmen

Your profits depend on skilled labor. None but the poor kind will work under unhealthy conditions. Write us before cold weather sets in.

MASSACHUSETTS FAN CO.
400 Howard St. Watertown, Mass.

The BERRY WHEEL AND MILL PROFITS

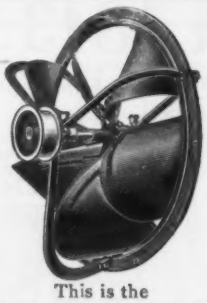
Pure Air and Greater Profits Result from Proper Ventilation

Because your operatives are thereby made capable of rendering their best service to you—and with less drain on their vitality.

Let the BERRY Help the "Help" to Help You

For Drying and Ventilating Facts, Write To

A. HUN BERRY, 29-33 West First St., Boston



This is the
BERRY WHEEL OR FAN
WITH NO BACK DRAUGHT
the most effective agent on the market for drying and for eliminating steam and other impurities from the air.

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LATEST DESIGN OF PUSHER FULLING MILL

OAK AND HARDPINE FRAME AND PLANKING : SPECIAL DOUBLE ACTING SHOCK ABSORBER : ECCENTRIC DRIVE.

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SUPERIOR QUALITY

MAIN OFFICE AND WORKS . ORANGE, MASS.
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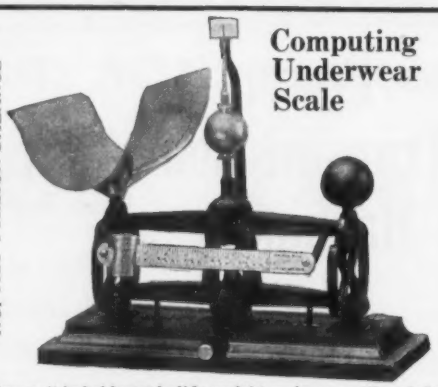
Computing Underwear Scale

NO. 4025 TORSION BALANCE



Place suit in holder and slide weight on beam until scale balances. Slide weight indicates weight per suit up to 3 lbs. by 1-4 ounce and per dozen to 36 lbs. by 1-4 pounds.
Ask for No. 4025 TORSION BALANCE.

THE TORSION BALANCE COMPANY
Factory, Jersey City, N. J. Office, 92 Reade St., New York

The Vulcan Roving Can prevents broken ends

in roving by its smooth, glossy inside finish and true running on the card table. The body is made of the best chemically treated fiber which has many of the qualities of rawhide. All rivets are burred so they cannot draw out. Rings are made of steel and have rounded edges. Every can is accurate in size and perfectly round. They are built for long continued satisfactory service. Write for prices and list of users.

James Hill Manufacturing Co.,
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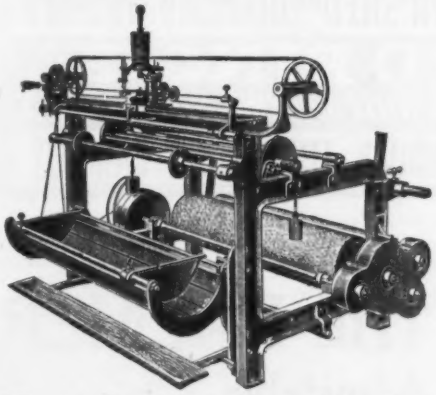
Can Handle 600 Cuts a Day



No. 4 Opening and Winding Railway Sewing Machine.

(Equipped with Dinsmore Head.)

Although this machine occupies but 5 feet of floor space, it easily handles from 500 to 600 cuts or pieces of cloth a day.

It takes cloth from the loom, unwinds, sews and rewinds it into rolls of any size up to 3000 yards.

The cloth is kept clean and free from wrinkles. The rolls are made hard and straight, ready for the shears, brushing machines or for shipment.

This machine can be had equipped with either the Dinsmore or the Singer type of sewing head.

When desired, we also furnish measuring attachment and inspecting board.

This sewer is now used in nearly all the leading cotton mills in the country. No other machine manufactured comes so near to putting the cloth in perfect condition.

Write for details of this and other sewing machines.

Dinsmore Manufacturing Co.
SALEM, MASS., U. S. A.

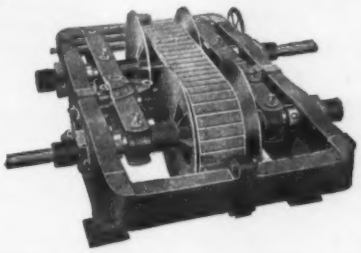
TIME WASTED

shifting a belt on cone pulleys, changing gears or worrying along with some other make-shift of a speed changer can never be regained.

"The Reeves" **Variable Speed Transmission**

will save all such waste, expense, trouble and worry.

It will pay for itself in a short time and a profit besides by enabling you to run your machines at exactly the right speed all the time—the fastest speed at which the best work can be done.



Never stop the machine to change the speed—just keep running right along and turn a hand wheel to secure the speed you want.

Adapts your machines to any work.

There is a size and a class suitable for your work.

Catalog T-16 illustrates many uses—free for the asking.

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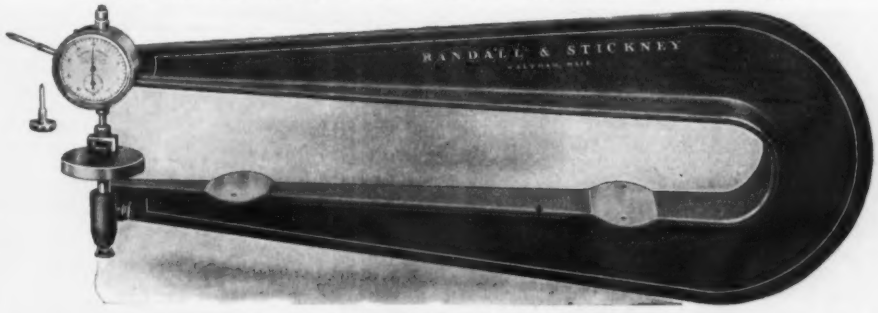
The New "Long Arm" Thickness Gauge for Textile Mfrs.

Measures Accurately to .001 inch!—Reaches 18" from edge!



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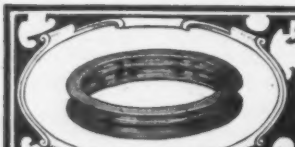
RANDALL & STICKNEY - - Waltham, Mass.



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RIBBED RING WHITINSVILLE

MADE BY THE WHITINSVILLE SPINNING RING CO. MASS.

THE BEST THAT EXPERIENCE CAN PRODUCE, THAT MONEY CAN BUY

THE

"No-Waste"

Seamless Hard Fibre Roving Can

It does not have the riveted seam that strains and breaks the sliver

NO SEAMS OR RIVETS

ABSOLUTELY SMOOTH

Also

Fibre and Steel Clad Cars
Doffing Trucks
and
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Special Shapes

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Adjustable Thread Guide

Cheapest to Buy

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Absolute and Rigid Adjustment

Mail Guide Block for Free Sample

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Established 1870

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Cloth Tentering and Drying Machinery

for WOOLENS, WORSTEDS, PELTS, etc.

Built Upright or Horizontal with Low Down Feed

Ventilating Fans a Specialty

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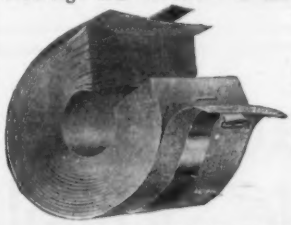
JM Asbesto-Sponge Felted Pipe Covering

Reduces Operating Costs

USE the covering that saves the most money. Hundreds of plants have proved that J-M Asbesto-Sponge Felted Pipe Covering is the "last word" for high pressure and super-heated steam pipes, because:

It contains more "dead air" cells than any other covering—and "dead air" is the best non-conductor of heat.



Made of felts composed of Asbestos fibres and ground sponge. Tough, pliable, and unaffected by high temperature.

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Costs Less— Lasts Longer

Whether you select your belts for quality, or for low first cost, you should consider **Gandy Stitched Cotton Duck Belting.**

Though **Gandy Belts** cost only 1-3 as much as leather and fully 25% less than rubber, they give service and satisfaction under conditions in which leather and rubber belts quickly wear out or require constant repairs.

The careful stretching and seasoning—the high quality of material—the special treatment which makes the belt water, heat and steam proof—these are a few of the reasons for the wonderful records described in the hundreds of testimonial letters we receive from users everywhere.

STITCHED COTTON DUCK

The **Gandy** was the first successful Cotton Duck Belt and through 35 years it has remained the standard and leader.

If you have a particularly severe belt condition, write us about it and let us send you proof of what **Gandy Belts** have done for others under similar circumstances

Full information, sample of belt and the name of the nearest distributor, sent you gladly without obligation.

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747 West Pratt Street
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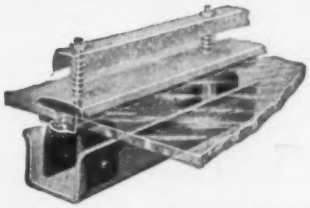
Sunlight Service Saves



There are men in *your* mill—in dark corners, under dark roofs—who could do double work with light and air. A skylight would save you money by increasing production. The trouble of erecting "Anti-Pluvius" is the last trouble this skylight will give. Fireproof, waterproof, permanent to the last degree—be sure to investigate this all-steel, puttyless design.

ANTI-PLUVIUS
(Trade Mark)
Puttyless Skylights
(PATENTED)

The G. Drouvé Co. Bridgeport Connecticut

STEPHENSON
Bar Belt Dressing

Saves Power and Fuel!

Prolongs Life of Belts!

TRADE MARK REGISTERED

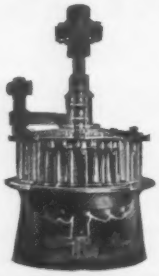
Made in solid or stick form, all of it is applied to the belt, and none wasted.

One pound lasts as long as two pounds of any liquid or semi-liquid dressing.

Let Us Send You A
One-Half Pound Sample Free?

STEPHENSON MFG. CO.
Main Office and Works, Albany, N. Y.

THE SAMSON TURBINE WATER WHEEL



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The Leffel Wheel, now developed into the Improved Samson Turbine, will continue to maintain, as it has for the past 49 years, its superiority because of features that give it wonderful power and high velocity, economy in the use of water, and an unusual steadiness of motion under variable gateage.

These are points of merit established by scientific and experimental tests.

Send for catalog illustrating and describing the different types and proving their merit

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This school is located in New Bedford, Mass., a rapidly growing city and already the largest producer of fine cotton goods in this country.

Instruction given in the theory and art of cotton manufacture in all its branches.

The school has one hundred ten machines for instruction purposes in carding, spinning and weaving departments; seventy in knitting department, the most complete department of the kind in equipment and scope of instruction in this country; twenty-seven machines in machine shop; thoroughly equipped departments in chemistry and dyeing, in designing, and mechanics.

Every instructor a man of broad experience and training.

Fourteenth year. Many graduates filling positions of trust and responsibility. Catalogue sent free on application. Address,

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Oldest in America
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Instruction given in Designing, Weaving, Carding, Spinning, Chemistry, Dyeing and Finishing

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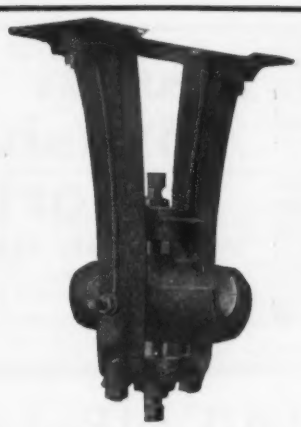
Laminar Fibre Roving Cans

All sizes, standard and special. Electrically Welded Tinned Steel or Fibre Rims. Steel or Wood Bottoms. Fibre or Steel Kicking Bands.

Strongest and Smoothest Can on the Market. In Use for 25 Years



Power Transmission Machinery

CRESSON-MORRIS COMPANY

Successors to Geo. V. Cresson Co.

Engineers—Founders—Machinists

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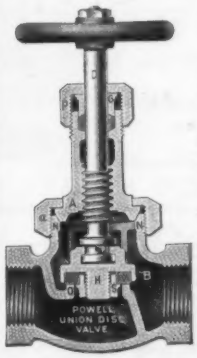
FIVE POINTS OF EFFICIENCY COMBINED IN THE POWELL UNION COMPOSITE DISC VALVES



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1. Body symmetrically designed and well proportioned.

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4. Disc holder (*H*) permits the use of any make of rubber discs.

5. All parts are made to gauge and are interchangeable.

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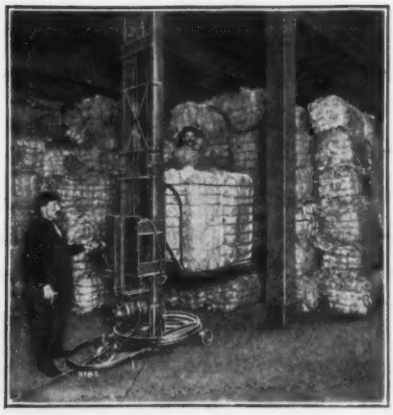

Enables two men to do the work of seven in the piling and unpiling of bales, cases, etc.

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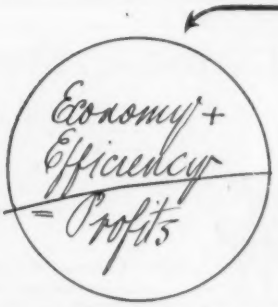

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Automatically controlled at minimum cost of supply and operation. No waste. No delay. Always ready and sure.

Singes closer, faster and more uniformly with 25 to 50% less consumption of gas.

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For Every Known
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The Name MASON Guarantees

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Agt. and Mgr.
CHAS. A. O'NEIL

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Bright **ELASTIC** Colorless
FINISH
ON
LACE, MUSLINS, ORGANDIES, TAPE, WEBBING, Etc.
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Established 1885
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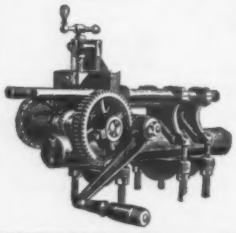
is not complete unless equipped with one of these
BURR KEYSEATERS



They cut perfect keyseats in shafting anywhere. Save time, delays and money. No. 1 keyseats shafts to 5 in. diameter. Price with full set of cutters, $40.00 net. No. 2 takes shafts to 8 ins. Price, with cutters, $75.00 net.
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Always Specify "DRONSFIELD" Grinders
The Grinders of World-Wide Fame
Supplied by all the leading
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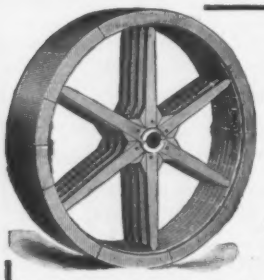

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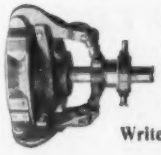

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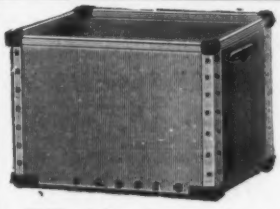

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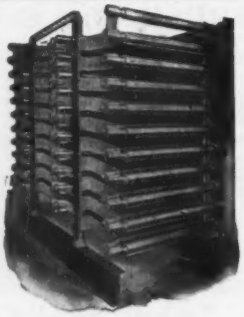

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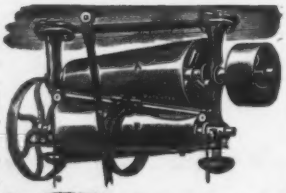

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TEXTILE WORLD RECORD

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A Complete Directory of Cotton, Woolen, Knitting, Silk, Flax and Jute mills of the United States and Canada, together with the Dyeing and Finishing Works, Bleacheries, Print Works and other Textile Establishments; about 7,000 in all. Full information is given about each mill in almost every instance, viz., the name of the company or firm, names of officers, agent, superintendent, the character of goods made, the machinery equipment, i. e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct. All this and much other information contained in this book is arranged in a way to be instantly accessible.

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Permanent Colors Create Permanent Trade

The insistent demand of the consumer for Fast Colors makes it imperative that the Retailer, the Jobber, the Cutter-up and Textile Manufacturers recognize the question, Fastness of Colors, as a most important one

Indigo The introduction of synthetic Indigo by the Badische Anilin-& Soda-Fabrik in 1897 greatly lowered its cost, simplified its application and placed it on a scientific basis. The immediate practical result has been that Indigo is used on an ever increasing scale in the production of overall goods (denims) for working garments worn by artisans of all classes everywhere, as well as for navy blues with white designs, in percales, and similar fabrics which are so largely used the world over for women's house and working dresses. Nothing has yet been found which is as well suited as Indigo for these and many other purposes, since it combines minimum cost, brilliancy of color and satisfactory fastness. In fact, the word "Indigo" to the consuming public is a guarantee of a durable and satisfactory color.

Indanthrenes Unfortunately, however, Indigo produces only a Blue, while the trade requires every shade in fast and brilliant colors. To Dr. Rene Bohn, Director of the Badische Antlin-& Soda-Fabrik, Ludwigshafen a/Rhein, should be given credit for the discovery of the series of dyestuffs derived from Anthracene, known as Indanthrene Dyes, which produce fast colors in every desired shade and tone. The introduction of these dyes in the cotton industry has created a new standard for fastness and brilliancy, in which combined respects they excel any colors heretofore known. Indanthrenes are actually permanent while the fibre lasts, meeting therefore every trade requirement, a fact so well demonstrated that today the word "Indanthrene" (pronounced In-dan-threne) is synonymous with "Fast Colors." There is probably no factor of greater importance in the manufacture of cotton goods than the fastness of the colors, in that it constitutes a most attractive selling argument, increases their popularity, and broadens the market for them.

BADISCHE COMPANY

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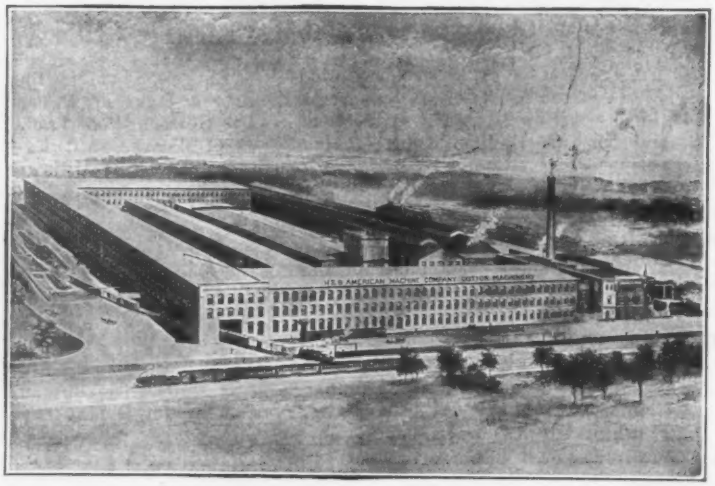
Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

COTTON MACHINERY



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TEXTILE WORLD RECORD

NOVEMBER, 1914

Monthly Comment.

"Component Material of Chief Value"

Protests by importers against duties assessed on certain goods composed of wool and cotton have raised an interesting question as to the meaning of the terms, "composed wholly or in chief value of wool" and "component material of chief value," which are found in the Underwood tariff law. The goods on which protests have been made by the importers are low-grade English cloths composed of a cotton warp and wool filling, the foreign valuation being about 20 cents per yard, 54 inches wide. The appraiser decided that the goods were composed in chief value of wool and accordingly assessed a duty of 35 per cent. The importer claimed that they were composed in chief value of cotton and should be subject to the lower rates of the cotton schedule. One of the importers stated the case to us and asked for information that might throw light on the disputed question.

The words "component material of chief value are defined as follows in paragraph 386 of the present law, the same definition appearing also in the laws of 1890, 1894, 1897 and 1909:

> On articles not enumerated, manufactured of two or more materials, the duty shall be assessed at the highest rate at which the same would be chargeable if composed wholly of the component material thereof of chief value; and the words "component material of chief value," wherever used in this section, shall be held to mean that component material which shall exceed in value any other single component material of the article; and the value of each component material shall be determined by the ascertained value of such material in its condition as found in the article.

Desirous of learning how this paragraph is now administered we applied to the Treasury Department and received the following reply:

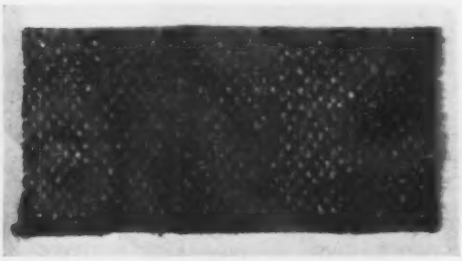
> Treasury Department,
> Washington, Oct. 23, 1914.
>
> Editor Textile World Record, Boston, Mass.
>
> Sir:—The Department is in receipt of your letter of the 17th instant, further in regard to the meaning of the terms "composed wholly or in chief value" and "component material of chief value," with special reference to the question whether in the case of cloth made of cotton warp and wool filling, the value of the finished fabric is apportioned between the wool and cotton and if not whether the relative values are taken in the form of the raw cotton and wool, or the cotton and wool yarn.
>
> In reply I have to advise you that the values of the yarns as they enter the fabric determines the component of chief value of the fabric, following the U. S. v. Hoeninghaus & Curtis, 131 Fed. Rep. 570 and the decision of the United States Court of Customs Appeals in T. D. 32532. The Court in the last mentioned decision uses this language:
>
> > "To ascertain the material of chief value in any manufacture the value of the materials should be determined at the time when they reached such condition that nothing remains to be done by the manufacturer except to put them together."
>
> Respectfully,
> A. J. Peters, Assistant Secretary.

The case to which Assistant Secretary Peters refers involved the duty on goods

composed of silk warp and cotton filling and the Court decided as follows:

The determination of this question depends upon whether the expense of warping the silk is to be added in ascertaining the value. The Supreme Court of the United States has held (Suburger vs Hardy) that this provision is declaratory of the law and that the value of the materials should be taken, not as they go into the hands of the manufacturer, but when they are in the condition that nothing remains to be done upon them by the manufacturer except putting them together to make the completed product.

It thus appears that under this rule the values of the materials are determined, not as the law provides, by the values of such materials in their condition as found in the article, but in the condition at some stage in



AN ENGLISH FABRIC OF COTTON WOOL AND SHODDY

the process of manufacture "when nothing remained to be done upon them by the manufacturer except putting them together to make the completed product." Whether this interpretation of the law by the United States Supreme Court is warranted by the phraseology of the Act is not the question that we propose to discuss now. The law is what the Court has said it is, and the point to which we desire to call attention is that, so far as many kinds of textiles is concerned, it is impossible of administration. This will be made clear by the English fabric shown at Fig. 1, which is sold abroad at 24 cents per yard, 16 1/2 ounces. This mixed fabric, which is of comparatively simple construction, is made up of the following materials:

4.8 ozs. 1 7/8 run cotton yarn
.8 ozs. 16s cotton yarn
2.5 ozs. 1 5/8 run cotton yarn
.4 ozs. 1 1/2 run wool yarn
8. ozs. 1 1/5 run cotton and wool mixed yarn

16.5

The materials in this cloth were "put together" in the following manner:

The manufacturer made 1 7/8 runs cotton warp, A.

He bought 16s cotton yarn (B) from another mill and twisted it with A, making a 2-ply cotton yarn, C (A and B).

He made 2-ply 1 5/8 run cotton yarn (D).

He made 1 1/2 run yarn, E, from raw wool.

He brought these materials, C (A and B), D and E together by warping them for weaving.

He mixed raw cotton, F, and wool shoddy, G, together and converted the mixture into 1 1/5 run filling yarn, H (F and G), which was combined with all the other materials in the process of weaving, to make the completed product.

The appraiser called upon to determine the component material of chief value according to the rule laid down by the court would have to determine the following values:

1. The value of the 1 7/8 run single cotton yarn, A, before warping.

2. The value of the 16s cotton yarn, B, before warping.

3. The value of the 1 5/8 run 2-ply cotton yarn, D, before warping.

4. The value of the 1 1/2 run wool yarn, E, before warping.

5. The value of the raw cotton, F, used in the filling mixture.

6. The value of wool shoddy, G, used in the filling mixture.

These appraisals would involve the determination of the cost, not only of the raw wool and cotton, but of the cost of each process, picking, dyeing, carding, spinning and spooling, also the proportion of the general mill expense, separately for each of the four kinds of yarn, A, B, D and E, together with the cost of preparing the raw wool and cotton for the filling mixture, including the share of the general expense. Finally the appraiser would add the wool values together, and also the cotton values to find out which is the component material of chief value.

The operations we have outlined are based on the simplest construction of the decision, namely, that the words "when putting them together" refer to that moment when each

portion of a material is ready to be united with any part of another material. If, however, the words refer to the time when all portions of each component part are finally ready to be united with all portions of the other materials that make the completed fabric, then, in addition to the operations already named, it will be necessary to calculate the cost (including fixed charges) of warping for each of the yarns, C (A and B), D and E, also the cost (including fixed charges) of picking, carding and spinning the filling yarn, and apportioning all the costs so found between such amounts of cotton and wool as may be present in the respective materials in process at the various stages of manufacture.

Such is the work that must be done under the rule of procedure laid down by the Court for determining the component material of chief value in a cotton and wool mixed fabric.

It is necessary only to name the necessary operations in order to show that the work is not merely impracticable, but utterly impossible. Assistant Secretary of the Treasury Peters says it is being done, but Mr. Peters has been in his present position only a few months. After he has studied the technical situation, he will recognize at once that when the United States appraisers report they are obeying this rule, they are in fact making only a pretense of following it. At the present time it is the custom when cases involving this rule arise, to send samples of the goods to the New York custom house and abide by the report of the officials of that port as to what is "the component material of chief value." We recently heard an attorney at a hearing before a U. S. General Appraiser ask a customs examiner how he had determined the material of chief value in a lot of goods imported at Boston. "We sent a sample to New York where an analysis was made," replied the examiner. That settled the question apparently in the minds of all present, the examiner, the attorneys on both sides and the appraiser who presided at the hearing. So this colossal pretense of accomplishing the impossible has its seat at the New York custom house, and is carried on under the name of "textile analysis." We have asked Assistant Secretary Peters to investigate this matter and obtain exact and detailed information as to the work, called "analysis" at New York, to determine the materials of chief value in textile goods. That information will expose the abuse.

The responsibility for such conditions rests, not on the Courts, but upon the members of Congress, who, instead of studying the measures they enact, refer these technical problems to subordinates and so-called "experts." The Courts have to interpret the tariff law as they find it. The customs officers are sworn to obey the law as so interpreted.

In this manner tariff abuses and absurdities are created and perpetuated for years. The remedy in the case now claiming our attention consists in an amendment to the tariff law placing the classification of mixed textile goods on a practical basis. A classification of mixed goods based on the relative values of component materials is inherently impossible. The only practicable basis of such a classification is the weight of the materials as found in the goods. The words "chief component material" should be substituted for "component material of chief value" and paragraph 386 should be amended so as to read as follows:

> On articles not enumerated, manufactured of two or more textile materials, the duty shall be assessed at the highest rate at which the same would be chargeable if composed wholly of the chief component material, and the words "chief component material", wherever applied to such articles in this section, shall be held to mean that component material which shall exceed in weight any other single component material of the article; and the weight of each component material shall be determined by the ascertained weight of such material in its condition as found in the article.

In that form the classification of mixed goods would be placed beyond question. This remedy for existing conditions may come as a result of the litigation which now seems unavoidable over the meaning of the words "component material of chief value".

With the exception of India, China is the greatest importer of cotton goods in the world and Manchuria has long been one of the best markets for American cotton goods.

Substitutes for Belgian and German Shoe Cloths

One of the leading American manufacturers of ladies' shoes, who has for years been using Belgian worsteds for shoe-tops and now finds himself suddenly deprived of the usual source of supply, write us as follows:

We have for years been using Belgian corkscrew worsteds for the tops of our best shoes and have never had a complaint regarding them. They have been very durable, and the color has been fast. The war has stopped our supply. We are sending samples of two Belgian fabrics, also nine other foreign shoe cloths. It is the Belgian cloths that we want to duplicate, but we are sending the others thinking they may be of some interest to you as showing the character of the foreign goods of this class. The eleven samples are as follows:

No. 1 is what we call our first quality, Belgian goods, made in Verviers, Belgium. The price is $2.50. These goods are about 16 ozs., 56 in. wide.

No. 2 is what we call our second quality, Belgian goods, and the price is $2.00. These goods are about 16 ozs., 56 in. wide.

No. 3 is what we call our third quality and the present price is $1.37. This is sold to us for Belgian goods, but we understand it is made just across the line in Germany. These goods are 16 ozs., 56 in. wide.

No. 4 is a Bradford fabric, all wool, 14 ozs., 56 in. wide, 60 yds. Price in 1914 was $1.54 and in 1913, $2.37.

No. 5 is a Bradford fabric, 62 per cent. cotton, 54 to 56 in. wide, 60 yds. Price in 1914 was 98 cents and in 1913, $1,63.

No. 6 is a Bradford fabric, all wool, 14 ozs., 56 in. wide, 60 yds. Price in 1914 was $1.94 and in 1913, $2.87.

No. 7 is a Bradford fabric, all wool, 14 ozs., 56 in. wide, 60 yds. Price in 1914 was $1.94 and in 1913, $2.87.

No. 8 is a Bradford fabric, all wool, 14 ozs., 56 in. wide, 60 yds. Price in 1914 was $1.94 and in 1913, $2.87.

No. 9 is a Bradford fabric, all wool, 14 ozs., 56 in. wide, 60 yds. Price in 1914 was $1.94 and in 1913, $2.87.

No. 10 is a Bradford fabric, all wool, 18 to 19 ozs., 56 in. wide, 60 yds. Price in 1914 was $2.20 and in 1913, $3.32.

No. 11 is a piece of English goods which we think corresponds with what we call our first quality Belgian goods and which we use occasionally when we get short of the No. 1 goods from Belgium. It cost about the same.

As I told you our preference is for Belgian goods, because they are not so harsh and work out softer. The shade of black between Belgian and English goods is a matter of opinion.

Our records show that we have been using about 40,000 yards per year for the last few years, sufficient for the tops in 400,000 pairs of women's shoes, as the shoes cut about 9 to 10 pair to the yard.

At the present time there is a big demand in the United States for this kind of cloth in buff and grey shades.—These black worsteds for women's shoes to my knowledge have sold to a greater or less extent for twenty-five years. The last two or three seasons we have been using them in large quantities, as you can see. How long that will last nobody knows, but they are more or less staple all the time. The trade may slacken and then all of a sudden consumers will begin to use them again. There has never been a time, to my knowledge, for twenty-five years, that we have not used more or less black worsteds in the tops of women's shoes. For the fall run, when we make our fall boots, from the first of March to the first of November, we use a larger percentage than we do for the spring run, when we are making a larger percentage of low shoes or oxfords, in which the cloth is not used to the same extent it is in boots. Southern Tier.

An analysis of the eleven samples enclosed in "Southern Tier's" letters gives the following results:

No. 1

Warp, 117 ends per in. Dressed 2 face 2/62s worsted, 1 back singe 22s worsted. Filling, 140 picks per in., single 32s worsted. Weight, 17.1 ozs. per yd., 56 in.

No. 2

Warp, 115 ends per in., 2/64s worsted. Filling, 83 picks per in., single 22s worsted. Weight, 11.8 ozs. per yd., 56 in.

No. 3

Warp, 109 ends per in., single 31s worsted. Filling, 124 picks per in., single 32s worsted. Weight, 11.7 ozs. per yd., 56 in.

No. 4

Warp, 92 ends per in., 2/40s worsted. Filling, 116 picks per in., single 33s worsted. Weight, 12.9 ozs. per yd., 56 in.

No. 5

Warp, 81 ends per in., 2/48s worsted. Filling, 104 picks per in., 12s cotton. Weight, 14.6 ozs. per yd., 56 in. Cotton filling, 63 1/2 per cent. of total weight.

No. 6

Warp, 118 ends per in., 2/59s worsted. Filling, 145 picks per in., single 45s worsted. Weight, 11.7 ozs. per yd., 56 in.

No. 7

Warp, 119 ends per in., 2/56s worsted. Filling, 149 picks per in., single 48s worsted. Weight, 11.7 ozs. per yd., 56 in.

No. 8

Warp, 117 ends per in., 2/56s worsted. Filling, 145 picks per in., single 47s worsted. Weight, 11.5 ozs. per yd., 56 in.

No. 9

Warp, 116 ends per in., 2/56s worsted. Filling, 145 picks per in., single 48s worsted. Weight, 11.8 ozs. per yd., 56 in.

No. 10

Warp, 153 ends per in., 2/47s worsted. Filling, 132 picks per in., single 28s worsted. Weight, 17.6 ozs. per yd., 56 in.

No. 11

Warp, 123 ends per in., 2/34s worsted. Filling, 152 picks per in., single 36s worsted. Weight, 14 ozs. per yd., 56 in.

The eleven samples are woven with corkscrew weaves, all being single fabrics except No. 1, which has a back warp. The present time affords an excellent opportunity for American mills to secure this trade. Any manufacturer interested in the business can see the samples at our Boston office and get into communication with "Southern Tier."

—:—

The War and Protection

Within a very short time after the breaking-out of war on August 1st it became evident that one result of the struggle would be a strengthening of the sentiment in favor of the policy of protection to home industries in all countries. Here in the United States not only the advantages, but the necessity of a protective policy was brought home to us by the sudden loss of the German supply of dyestuffs, chemicals and pharmaceutical products, the manufacture of which had been for years diverted to foreign countries by our patent and tariff laws. The same humiliating situation existed in Great Britain. The war with its sudden embargo on Germany's export trade showed the world that a failure to protect home industry in Great Britain and the United States had made many of the important industries of these countries dependent upon Germany. It was but natural that this object lesson would stiffen the convictions of protectionists and open the eyes of free traders to the fundamental weakness of their cherished theories. Evidence of the last-mentioned result is supplied by the following item taken from the "Manchester Guardian" of October 7, which shows that free traders have been brought to the point where they frankly and publicly urge the adoption of a policy of protection to British industry:

The Council of the Leeds Chamber of Commerce yesterday considered the position in regard to the aniline dye industry, which is largely the monopoly of three or four powerful German firms. J. E. Bedford said that what was required to establish the industry in this country (England) was facilities for working the German patents under some form of protection. He was a free-trader himself, but in this case it would be difficult to foster the industry in face of the immensely wealthy German firms unless there was some form of protection for ten to fifteen years. The opportunity had come quite unexpectedly to the color manufacturers of this country, and extensive preparations would be necessary to meet the position. There was an absolute famine in dyestuffs in Britain, and dyers were in a quandary.

The Council agreed to send a letter to the Chemical Products Supply Committee, urging the need for the imposition of duties on dyestuffs imported from Germany for such a period as would encourage the investment by traders in this country of capital required for the development of the business. The Council also suggested that pure alcohol should be supplied for laboratory use free of duty, as is the case in Germany.

—:—

Subject to the Ability to Secure Dyestuffs

The dangerous dependence of the American textile industry on foreign countries for its supply of dyestuffs was brought forcibly to the attention of the War Department on October 14 when the U. S. Quartermaster at Philadelphia opened bids for supplying 500,000 yards of shelter tent duck for the army. John C. Eames, of New York, offered to supply the goods at 23 cents a yard, but subject to his ability to secure dyestuffs for coloring the cloth. John H. Meyer & Co., New York, offered to supply four lots of 125,000 yards each at 24, 24 1/4, 24 1/4 and 24 2/4 respectively, but specified that his bid was subject to his ability to secure dyestuffs. The U. S. Quartermaster General at Washington informs us that the bids were not considered. The specifications on which the bids were based are as follows:

Specifications for Shelter Tent Duck

Material.—The yarn to be made of American cotton. The fabric woven in a workmanlike manner, free from imperfections and sizing. To be thoroughly brushed to remove motes or other foreign substance.

Threads.—To contain not less than sixty-four threads of two-ply yarn to the inch of warp, and not less than sixty threads of two-ply yarn to the inch of filling.

Strength.—To sustain a tensile strength of not less than seventy-eight pounds to the one-half (1/2) inch in the warp, and not less than sixty-five pounds to the one-half (1/2) inch in the filling.

Width.—To be full thirty-three (33) inches wide when finished, with a blue thread of two-ply yarn

woven in the fabric one (1) inch from each selsage appearing on the face on both sides.

Weight.—To weigh not less than seven and one-quarter nor more than seven and three-quarters ounces to the linear yard.

Color.—To be an olive drab shade as represented by the sealed standard sample and may be dyed in the raw stock, yarn, or piece. Fast to climatic influences, such as sunlight, air, and exposure incident to the military service. To be evenly and regularly dyed and to be subjected to the following official tests for ascertaining permanency of color:

1. Boiling for 10 minutes in a solution of soap (eighty grains of Oleine soap, Army issue, to one pint of water).

2. Boiling 10 minutes in a solution of soda (ten grains of dry carbonate of soda to one pint of water).

3. Whenever deemed necessary by the contracting officer the duck will be subjected to exposure to sunlight, air, and moisture for a period of 30 days.

In all points not covered by these specifications to be like and equal to the standard sample in all respects.

Secretary Redfield and the Textile Industry

Last month Secretary of Commerce Redfield abandoned his official post at Washington to take the stump for Democratic candidates in various States. In New Hampshire and Massachusetts he paid special attention to the textile industry, the following passages being taken from speeches:

The remedy for New England manufacturers is not protection, but the introduction of up-to-date machinery in the textile mills, the installing of efficiency and cost-keeping methods and the elimination of the speculative profit schemes.

Too little has it been true that these mills have been managed either with a keen and searching knowledge of scientific manufacturing or with a due regard to the righteous and righteously growing demands of the men and women who labor in those mills, and who are of far greater value to the nation than the mills are.

The Democratic industrial policy is a policy of adult manhood. The very word "protection" which our Republican friends have adopted is itself a confession of weakness, and its cult is that of industrial cowardice. Nothing needs protection unless it is relatively feeble, and feebleness is in its nature timid, and timidity is not the characteristic of men.

We have the right to expect from the employer also that he shall know his job, do the best he can and be willing to learn.

In 1913, Secretary Redfield's party was engaged in revising the tariff, and the Ways and Means Committee applied to the Department of Commerce for information regarding tariffs and industrial conditions. The report in response to this request was completed and delivered to the Committee after Mr. Redfield took charge of the Department so that he is officially responsible for it. Among other things it gives what purports to be the relative efficiency of various industries in the United States and Great Britain, rated by the number of wage earners for every $100,000 added to the value of material by manufacture. Here are the figures for the textile industries:

	Number of Wage Earners	
	United States	Great Britain
Cotton	47	255
Bleaching, dyeing, finishing	91	191
Linen, jute, hemp	128	320
Woolen and worsted	109	283
Silk	111	358
Hosiery and knit goods	144	312
Average	105	286

Secretary of Commerce Redfield in May, 1913, tells a Democratic Ways and Means Committee that on an average 105 textile operatives in the United States do as much work as is done by 286 operatives in Great Britain, the leading textile manufacturing country of the world, and these supposed facts are published in order to justify a reduction of the textile tariff. In October, 1913, the same Secretary of Commerce Redfield leaves his post of duty at Washington to take the stump and tell the voters of New England that the textile manufacturers of this country need, not protection, but "the introduction of up-to-date machines in the textile mills and the installing of efficiency and cost keeping methods."

What is the explanation of these contradictory statements? Politics in both cases. In May, 1913, Secretary Redfield wanted a Republican tariff smashed. Seventeen months later he wants to prevent a Democratic tariff from being raised. As a matter of fact his statements regarding textile mill efficiency were wrong in both cases. The Senate called on him for an explanation of

his 1913 efficiency figures and in a letter dated July 11, 1913, he was forced to admit they were wrong. Anyone who reads his report will recognize their absurdity. His stump speeches in New England on efficenicy are of the same character. He gives no figures, nor facts, points to the results of no investigation of the textile industry to support his statements, but contents himself with unsupported charges of inefficiency againts industries that he officially declared last year were the most efficient on earth.

These intellectual gymnastics are nothing new for Mr. Redfield. Going back a short time to June 12, 1912, we find him discussing textile costs and efficiency when schedule K was before the House of Representatives, his object on that day being to show that American textile industries were more efficient than those abroad and consequently needed no protection. He not only spoke to but overawed his colleagues, most of them lawyers, as a manufacturer who had personal knowledge of what he related. Remember he was discussing the tariff as applied to wool and wool goods. He had seen twenty women with a rope operating one pile driver in Japan at four times the New York cost. In a brick yard in Singapore men working for 35 cents a day were making brick at precisely the American cost. A French superintendent of a Singapore rubber factory told him it took five Malays to do the work of one Frenchman. He saw five men pushing a truck of 400 pounds in England at a daily cost of $6.25 and an American who was with him shrugged his shoulders and said the work would be done in the United States for $3.50. An English employer told Mr. Redfield he could not raise a certain employe's wages over $10 a week, for if the rate was increased the man would lay off to keep the amount down to the ten dollars. Mr. Redfield learned "on information and belief" that the regular loss of time from drunkenness was 4 per cent. in Birmingham, 8 per cent. in Manchester and 12 per cent. in Glasgow. He told of a letter he had received from a man in a Japanese cotton mill, stating that the writer, when making plans to heat his mills figured on three to four times as many employes as are needed in an American mill of the same size. Having reeled off this mass of industrial gossip Mr. Redfield triumphantly jumped to the conclusion at which he had evidently been aiming:

> From the above sketch it is affirmed without fear of successful contradiction, that American production today is often as cheap or cheaper in the labor cost per unit than foreign, and so far from needing protection, it needs to be set free, that we may conquer the world.

Our textile industry needed no protection because it was more efficient than the foreign industry in 1912 and 1913, while in 1914 it needs no protection because it is inefficient. No one acquainted with the Secretary of Commerce would conclude that his conflicting arguments indicate a deliberate intention to deceive. They are rather the result of that mental exuberance which accepts a line of reasoning that supports a preconceived conclusion. Bring him down to technical conditions in textile mills and he at once shows a very dim comprehension of what textile efficiency is. For example, on June 4, 1912, he told the House of Representatives that "the standards of the (woolen and worsted) industry are low." To prove his assertion he presented the Tariff Board report on ratios between the actual number of picks woven and the theoretical number the loom is capable of making, to show the efficiency of woolen and worsted weave rooms, oblivious to the commonplace that of two weaving mills, the more efficient one may show the lower ratio.

For four or five years Mr. Redfield has posed as the guide, philosopher and friend of industrial efficiency. In view of the results disclosed by an analysis of his public arguments, the question naturally arises, What degree of efficiency is he exhibiting in the Department of Commerce? We have already referred to the efficiency report he gave to the Ways and Means Committee in May, 1913, and acknowledged to be wrong two months later. His Department is now engaged in an investigation to determine the cost of hosiery and knit goods, a work which in Congress he ridiculed as impossible. It is common knowledge in the trade that he

has abandoned the idea of using "the ample powers" which the law gives him and that his agents are conducting the inquiry by the same method that in 1912 he denounced as futile. What is the cost and efficiency of this work?

Last February we asked Secretary Redfield for information as to the cost and utility of the investigation of foreign markets for cotton goods by his Department, and his reply showed plainly that he had no system that would show either its cost or its utility. A few months ago he sent around the country an exhibit of wool goods collected abroad to show the possibility of selling American woolens and worsteds in foreign markets, including such countries as Ceylon, where not more than one person in forty wears more than a cotton loin cloth, India, where the annual consumption of wool goods amounts to only 4 cents per capita, and China where the largest part of the population wear cotton clothing, wadded for winter wear.

It seems not unreasonable to suggest that Secretary Redfield suspend for a time his criticism of conditions in the textile industry and devote himself to a searching examination of the cost and efficiency of the Department of Commerce, for which in his last annual report he lays emphasis on the necessity for increased appropriations.

The Myers Labeling Bill for Textiles

On April 9, 1913, Senator Myers of Montana introduced in the Senate a bill requiring the labeling of textiles. It was first referred to the Committee on Interstate Commerce and on March 19, 1914, was transferred to the Committee on Manufactures. The bill was patterned after the Grosvenor shoddy bill of 1901, the chief paragraphs in the two bills being nearly identical, as is shown by the following comparison of the two:

Grosvenor Bill, 1901.	Myers Bill, 1913.
That for the purposes of this Act the words "pure wool" shall be understood to mean sheep's wool, which has not been previously used in the manufacture of any other article, goods, or fabrics, and the words "woolen goods" to mean goods or fabrics composed wholly of such wool.	That the term "pure wool" as used in this Act shall be understood to mean sheep's wool which has not been previously used in the manufacture of any other article, goods, or fabric, and the words "woolen goods" shall be held to mean goods or fabrics composed wholly of such wool.

The absurdity of the old Grosvenor shoddy bill was thoroughly exposed soon after it was introduced in 1901. Nevertheless it has reappeared at intervals since that date, with the essential features unchanged, but bearing each time a different name, that of the statesman who happened to introduce it. The "pure wool" paragraph, given above, invariably appeared in the bills, forming a sort of trade-mark or label of identification. Thus for thirteen years the public has been frequently regaled with the Grosvenor shoddy bill under various aliases, such as Murdock, Lindquist and Myers, but in each case the same old Grosvenor shoddy bill.

From this persistence in the fathering of a demonstrated impossibility one might naturally conclude that the "pure wool" statesmen of the past thirteen years were lacking in intelligence, but this does not necessarily follow. The main object of these shoddy bills has been, not to protect the public against fraud, but to protect their sponsors against defeat at the polls. Every right-thinking person is desirous of preventing fraud against the public in general, and everyone without exception is in favor of preventing fraud against himself or herself in particular. For this reason there is probably no legislative proposition that will be received with more overwhelming approval by the voters of this country than a bill which they believe will prevent fraud in the sale of goods.

While it is, therefore, easy to win popular approval for a bill supposed to be framed to prevent fraud, it is so difficult that it may be considered impossible to interest any considerable number of people in the question of whether a particular bill would be effective in protecting the purchasers of textile goods. If asked to consider this point the average person will say in effect: "Oh, that is a technical question that I don't understand. I

suppose Senator Myers or Congressman Lindquist has looked carefully into that, and I am in favor of the 'pure textile' bill." And so this public sentiment against fraud and the public disinclination to study the bills on their merits have given the politicians their opportunity to win popularity by introducing "pure textile" bills in Congress or the State Legislatures. Added to this has been the fact that the wool growers generally have labored under the delusion that a bill to compel the labeling of wool goods would result in an increased demand and consequently a higher price for wool.

These facts explain the frequent reappearance of the discredited Grosvenor shoddy bill on the legislative stage, but under different names for thirteen years. The measure was originally backed by the National Live Stock Association and introduced in the House of Representatives in 1901 by Congressman Grosvenor, who came from the wool-growing State of Ohio, and it is no mere coincidence that one of its sponsors in 1914 is Senator Myers, of Montana, a State which polled only 79,826 votes in the presidential election of 1912, but which shears annually 4,200,000 sheep. The Grosvenor-Murdock-Lindquist-Meyers measure has been promptly exposed every time it has made its appearance and every intelligent person who gave close attention to the exposure, was necessarily convinced of its absurdity. Usually the sponsors for the bill have been content to let the exposures go without reply, but if they gave them any attention, it was to change the bill with the result that its absurdity was generally increased. For example, in May, 1902, former Congressman Wm. M. Springer, the paid agent of the National Live Stock Association, stated to the Ways and Means Committee:

> It has been stated by some manufacturing papers or persons interested in manufacture that some qualities of shoddy or mixtures or adulterants are more valuable than the wool itself which is contained in the fabric. That is true in some respects, as I will show you in a moment. Therefore, in order to bring those goods out of this category I desire to add at the end of the first section the words "Or of goods or fabrics composed in part of such wool and of other ingredients of equal or superior value," so that the latter part of it will read:
>
> "And the words 'woolen goods' shall be held to mean goods or fabrics composed wholly of such wool or of goods or fabrics composed in part of such wool and of other ingredients of equal or superior value."

Think of not only distinguishing wool from wool shoddy in a fabric, but determining the relative values of these materials. Congressman Lindquist, of Michigan, who introduced his form of the Grosvenor bill on May 10, 1913, attempted on December 18 to meet the exposure of it by inserting, in an obscure part of the bill this proviso, which nullified the main object of the measure:

> That in all articles or fabrics composed in part of pure wool and shoddy the percentage of these constituents need not be stated.

The latest exhibition of these ostrich-like tactics is supplied by the Senate Committee on Manufactures, to which the Myers bill was referred. The truth about the Myers bill was made known to this Committee, and being intelligent men they recognized it. Being politicians, however, they failed to act on the truth and condemn the bill, but instead attempted to amend it, and with the result, as in the case of Springer and Lindquist, of making the bill even more ridiculous. The Commitee eliminated the paragraphs defining "pure wool" and "mixed goods," part of which is shown above in parallel with the original Grosvenor bill, and in their place inserted the following section with five clauses:

> Sec. 7. That for the purpose of this Act a fabric or article made therefrom shall be deemed to be misbranded when the mark, tag, or label thereof:
>
> First. Fails to state plainly in the English language the kind of fiber of which the fabric or article made therefrom is composed or, when composed of two or more kinds of fibers, fails to state plainly and accurately the proportions of each by weight; or
>
> Second. If the fabric or article made therefrom be composed in whole or in part of fibers which have been used previously in another fabric, or article made therefrom, the mark, tag, or label thereof fails to state correctly this fact, together with the proportion by weight of such fiber in said fabric or article made therefrom; or
>
> Third. When the mark, tag, or label does not state correctly the weight per unit length of all fabrics in the piece; or
>
> Fourth. When the mark, tag, or label fails to state correctly the amount of loading and of sizing in said fabric or article made therefrom; or
>
> Fifth. When the mark, tag, or label bears any statement or design whatsoever concerning the fabric, or article made therefrom, which shall be

false or misbranding in any particular regarding its component parts, processes to which it has been subjected, or any other characteristics.

The first clause with the words "kind of fiber" is so vague that it is open to the most impracticable of constructions. Does the Committee intend that the label should distinguish between different kinds of wool, of cotton, of linen, or of silk, between fine and coarse wool, mohair and camel hair? If not, what does the clause mean?

The second clause is but an aggravated form of the impracticable proposition found in every reproduction of the Grosvenor shoddy bill from the original in 1901 to the Myers bill in 1914. Previous bills of this kind have limited to wool goods the task of distinguishing new and reclaimed material, but the Senate Commitee on Manufactures extends it to every textile fiber. This idea is based on the false assumption that when new and reclaimed fibers of the same kind are mixed and manufactured into a fabric they can be distinguished and the proportion of each, new and reclaimed, determined. Over and over again has that been shown to be absurd; over and over again have its sponsors been forced to abandon it, and over and over again has it reappeared to serve the political purposes of men seeking re-election to Congress. Instead of dwelling on the impossibility of this clause, let us examine the evidence advanced by the Committee in support of the Myers bill. It is in the form of a letter, addressed to Senator Myers, from Assistant Secretary of Agriculture Gallaway, who encloses two statements, one by the Chief of the Bureau of Chemistry, and the other by Orator F. Cook, of the Bureau of Plant Industry.

The Chief of the Bureau of Chemistry has this to say about shoddy:

> Shoddy is made from wool fibers which have been previously used in another fabric. The fibers under the microscope have a broken appearance, and the characteristic scales on the fibers have been in whole or in part worn away, giving the fibers a much smoother appearance than usual. There is usually apparent the fact that different kinds of dyes have been used, as shown by microchemical tests.

And on the strength of such information the Senate Committee recommends the passage of a law requiring under penalty of fine or imprisonment or both, the labeling of textiles to indicate how much of the raw material was new and how much had been previously used in another fabric.

Up to the present time the problem of determining the amount of weighting in silk goods has baffled the chemists of the world. The chief of the U. S. Bureau of Chemistry disposes of this question in these words:

> Another form of adulteration is seen in the "loading" of silks. The silk is sometimes so loaded that the loading weighs much more than the original silk. It frequently results in making the fiber so brittle that the goods soon crack and are ruined. Much of the loading used is of a mineral character, so that by burning a weighed piece of cloth the amount of ash less the normal amount of ash in silk gives the amount of loading.

Mr. Cook, of the Bureau of Plant Industry, boldly proposes this plan for protecting the purchasers of cotton goods:

> The simplest and most effective way to supply the public with the needed protection in the case of cotton would be to require that fabrics and other cotton manufactures carry marks or labels certifying the length of the staple of which they are made. On account of the high correlation of this factor with other desirable qualities a simple certification of length would remove a very large part of the temptation to use inferior fiber. The only standard that it would be necessary to establish in the enforcement of such a law would be to determine what percentage of fiber of a given length would be required to justify a certification of that length of fiber for the fabric as a whole.

Mr. Cook offers no explanation of the method by which the length of fibers in cloth is to be determined, but relies apparently on his authority as an expert to carry conviction. He is, however, in some doubt as to wool:

> Whether a similar standard of length could be applied to the same advantage to wool, I am unable to state, but at least it would afford a means of discouraging the use of short pieces of wool fiber, the material that is usually employed in shoddy goods, and that has to be combined with cotton to give the fabric an appearance of strength.

On the strength of such rubbish as that from the Bureau of Chemistry and the Bureau of Plant Industry we find the Myers textile labeling bill stamped with the approval of the Department of Agriculture and the Senate Commitee on Manufactures:

> As so amended, the committee recommends that the bill do pass.
>
> This bill after its introduction was referred to the Department of Agriculture for its opinion thereon and views as to the need thereof and

feasibility of its enforcement. The Department of Agriculture is heartily in favor of the bill. It approves the principle thereof and believes that it is enforceable. Nearly all of the amendments recommended were suggested by the Department of Agriculture, which has taken an active interest in the bill and furnished much valuable information in relation thereto.

On top of that the Committee in its report makes this false charge against manufacturers:

The imposition practiced upon the public by palming off upon and selling to the public mixed and shoddy goods under the claim that they are pure goods and obtaining therefor pure-goods prices has reached enormous proportions, and it is one of the great economical evils and dishonest practices of this age. . . . In most cases dealers are not to blame for the imposition practiced on their customers. The chief trouble is with the manufacturer. The dealer orders of the manufacturer and pays for something which he thinks he is getting, and he in turn represents it to be such to his customer, when many times it is not such, and both dealer and customer are defrauded.

It would be difficult to frame a statement more directly in conflict with the truth. Woolen and worsted manufacturers sell in large quantities to merchants who are expert judges of wool goods and equipped with facilities for testing the materials. Under such conditions it is practically impossible for the manufacturer to deceive the buyers of their products. With negligible exceptions it may be confidently asserted that the misrepresentation of textiles occurs after they leave the hands of the manufacturers and while in the possession of the dealers. Nevertheless these dealers are absolved from blame and are represented as innocent victims by the Senate Committee on Manufactures.

The report was presented to the Senate by Senator Pomerene of Ohio, and bears the name of no other member of the Committee, which is composed of the following Senators:

James A. Reed, of Missouri.
Ellison D. Smith, of South Carolina.
Atlee Pomerene, of Ohio.
James A. O'Gorman, of New York.
John R. Thornton, of Louisiana.
James H. Lewis, of Illinois.
George T. Olive, of Pennsylvania.
Robert M. LaFollette, of Wisconsin.
Albert B. Cummins, of Iowa.
George P. McLean, of Connecticut.
Jacob H. Gallinger, of New Hampshire.

If this report on the Myers bill was not unanimous the minority members who dissented from it should lose no time in letting that fact be known. It is a sad commentary on legislative and administrative conditions at Washington when such a measure as the Myers textile labeling bill is endorsed by a Commitee of the Senate and a Department of the Government in a report containing such statements as these which we have quoted.

Wool, Tops and Yarn

The imports of wool, tops and wool yarn for the three months ending September, 1914, are reported by the Bureau of Commerce as follows:

Clothing and Combing Wool			
July	lbs.	13,680,588	$4,720,650
August		11,790,980	3,089,974
September		9,096,205	2,315,488
Carpet Wool			
July	lbs.	6,150,565	$1,028,569
August		4,777,641	769,841
September		4,705,674	773,637
Mohair			
July	lbs.	309,250	$101,930
August		238,490	93,848
September		407,651	141,040
Tops			
July	lbs.	1,064,988	$578,152
August		369,230	191,774
September		563,477	270,546
Yarn			
July	lbs.	755,956	$544,974
August		307,825	223,713
September		277,355	186,235

OVERSEERS' MEETING

The thirty-second annual meeting of the National Association of Woolen and Worsted Overseers will be held at the American House, Boston, Mass., Saturday, November 21st. At this meeting the election of officers for the coming year, amendments of the constitution and by-laws, and other business will be taken up. The banquet will be held at 1.30 p. m. The committee are in hopes that a large number will report at the meeting and return the postal cards stating they will attend. It is the intention of the committee to have the Hon. James M. Curley, Mayor of Boston, make an address at this meeting.

THE WOOL GOODS MARKET

New York, Nov. 1, 1914.

October has been a month of disappointment in the woolen goods district. The optimism of the previous month was turned to decided pessimism with a large majority of selling agents. The change has been caused by the war, combined with the unusually warm weather of the greater part of the month. Slow collections are playing their part in reducing the volume of business.

The serious conditions existing in the South, caused by the reduced exportation of cotton, has paralyzed business in that vastly important section. Until a reasonable solution of the problem is reached, the deadlock is likely to continue.

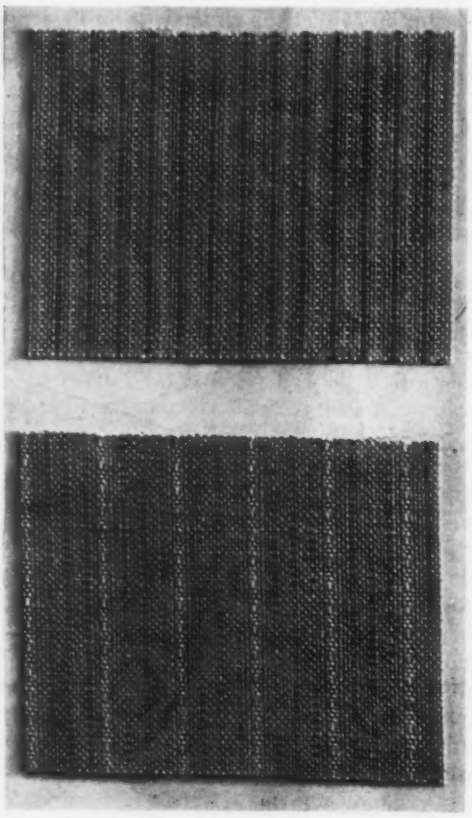
It is hoped that the recent announcement of England that American cotton would not be treated as contraband and would have the freedom of the seas, will result in starting large exports of cotton from the South, thereby relieving the business situation.

The men's wear market is having an exceedingly discouraging experience, with many cancellations on all kinds of fabrics being received daily. Selling agents have shown the writer many letters from wholesale clothiers asking that their orders be cancelled or, in some cases, a delay of from one to two months be made in the delivery of their purchases. That means cancellations unless a decided improvement in business is assured in a reasonable time.

The wholesale clothiers have had their salesmen on the road over a month with but very limited sales reported. The explanations given for small sales vary with the different sections of the country. The general summing-up is that the depression is caused by the unusual number of working people thrown out of employment. This with the many lowering and passing of dividends has affected the purchasing power of most classes of consumers.

The fabrics to suffer most are naturally those that have experienced the largest sales on orders. They are the extremely popular tropical fabrics which have sold largely for the Southern trade. There were so many million yards of those fabrics sold that some makers will welcome good sized cancellations, while many more fear their cancellations will reach serious proportions.

The cancellations have extended more or less to nearly all fabrics, many being reported on leading makes of fancy suitings in various grades.



SAMPLES OF TROPICAL MOHAIR GOODS WITH COTTON WARP

Some dyestuffs are being received from Germany, but the situation is not yet such as to remove all anxiety, and the exigencies of war are liable to cut off the supply entirely any day without notice.

The large demand for army blankets, uniform cloth and overcoatings for the allied armies has caused the greatest stir in the market. Large contracts have been placed for such blankets and a number of mills are busy rushing them out as fast as possible. Preference has been given to those promis-

ing the earliest deliveries, as it is imperative that all the armies shall be supplied within a month. Among the largest contracts made are with John & James Dobson, said to be for 300,000 blankets, another with the American Woolen Co. probably for a larger number, another with W. H. Duval & Co. for a large number, the amount of which has not been made public.

It is reported that the contracts for uniform cloths and overcoatings are not being accepted to any extent by our manufacturers, as the prices at which the contracts are being offered are not satisfactory.

Khaki cloth is in great demand for army purposes and it is probable that some contracts have been made here. This fabric or color cannot be made satisfactorily without considerable experience. With the difficulty of obtaining the proper dyestuffs and the required grades of wool, it is not advantageous for many mills to undertake the contracts now being offered by agents from the foreign governments.

The feature of the domestic business for the month has been dress goods in various fabrics, principally worsteds. They sold freely early in the month, since which time there has been a decided slackening of sales. Many cancellations have been reported, some of them on fabrics well sold ahead, while others require every order taken. A few days of cold weather will undoubtedly improve this branch of the woolen business, which has been adversely affected by the unseasonably warm weather. The slightly cooler weather during the latter part of the month had a favorable influence on the dress goods market which resulted in some gain in sales.

Some importations of dress goods are reported as being made. They are principally gabardines, serges and poplins which are made in England, with a few from France. They are, however, comparatively small in quantities. The decline in importations has caused a larger demand for the finer grades of domestic goods.

Some French and German manufacturers are seeking business here and offer guarantees of prompt deliveries. It will take considerable optimism to accept their guarantees, as mills in those countries are liable to be closed any day.

The English government having recently commandeered the production of their mills for army purposes, it is quite probable that their mills, which have been making goods for this market, will have to abandon work on those fabrics and make army goods. Some manufacturers have been shipping large quantities of several fabrics here with regular deliveries according to contract.

Our manufacturers of fine men's wear worsteds and woolens are having the benefit of lower prices for fine Australian wool, the demand from all Continental manufacturers having been entirely eliminated, and the English demand greatly reduced.

Although the importation of the finer grades of woolens and worsteds has been practically stopped, the domestic manufacturers of those fabrics are not having the unusually large business looked for. The merchant tailoring business that absorbs such fabrics, has suffered a decline as their trade has been obliged to practice economy on account of unsatisfactory conditions.

Many mills making fabrics for the general clothing trade are still well sold ahead for the spring goods season, while a still greater number, having distributed their fabrics freely in small sample lots, are anxiously looking for the requisite duplicate business which they confidently expected a month ago. Up to the present time it is not materializing.

The samples of tropical mohair with cotton warp fabric, herewith illustrated, are from one of the lines of popular tropical cloths that were sold freely this season by the agents, Walker & Roosevelt, at 29 cents per yard, 30 inches wide.

The demand for fall and winter fabrics for both men's and women's wear, which was unusually active during September, was checked by the unusually warm weather of October. Buyers cancelled many goods in process of manufacture on their orders. Considerable friction was caused and many buyers were compelled to accept their goods. The colder weather of the latter part of the

month relieved the situation with a new demand for all kinds of cold weather fabrics. Goods adapted to Balmacaan coats were specially in demand and mills making such fabrics have disposed of their stocks.

Broadcloths for women's wear are also well sold up and they have been the best selling fabrics for such wear.

Mackinaws have been sold quite freely for the fall and winter season of 1915. They have met with free sales for the west and northwest trade.

THE PATERSON EXPOSITION

The Industrial Exposition and Style Show was held in the Armory at Paterson, N. J., from October 13th to 24th inclusive and was well attended. Paterson being a silk centre, most of the exhibitors were manufacturers of silk and the machinery and supplies shown were for the most part adapted for this line.

One of the interesting features of the show, especially to the ladies, was the showing of gowns of silk fabrics on living models, which occurred every afternoon and evening. The gowns were all designed by Americans and made with American products.

During the time of the exhibition a number of associations connected with the manufacture of silk in all its different lines attended in a body. Notable among them were members of the Silk Association of America who after attending the exposition were entertained at the Hamilton Club.

The decorations of the Armory were on an elaborate scale and pleasing to the visitor's eye, "Safety First" being the slogan of all arrangements and the scheme was carried out to perfection.

A GENERAL VIEW OF THE PATERSON EXPOSITION

Much interest was manifested in the different booths of the exhibitors. One could see in the exhibition the different processes of silk from the cocoon to the finished product. Among the many exhibitors noticed were the following:

Permutit Company had a very attractive exhibit of their filters such as they are installing in silk mills and other textile establishments. The booth was in charge of Mr. Calvo.

Crompton & Knowles Loom Works had three of their different types of looms running, turning out ribbons and broad silks. The exhibit attracted many visitors and was in charge of W. L. Kinkead and H. G. Gerrish, their agents in Paterson.

A. Suter showed his many specialties for silk manufacturers, also samples of Schappe for which he is agent in this country.

The Carrier Air Conditioning Company's exhibit consisted of a section of a two-story mill fully equipped with the Carrier System of humidifying, heating, cooling and ventilating. Each floor of the mill was equipped with a separate system of automatic humidity and temperature control. This control and the heater were so designed that cold air could be supplied to one floor and at the same time hot air to the other floor. This condition is always encountered in mills where most of the power is concentrated in one department. The humidifier was liberally equipped with glass doors so that observers could see the passage of the air through the fine spray of water which was supplied by a centrifugal pump directly driven by a General Electric motor. At the outlet end could be seen a portion of the dirt and dust removed from the air. A look at this made one conjecture only on how much damage it could do to delicately tinted silks. The Carrier portable humidifier, air cooler and washer developed by this company was also on exhibit. This machine is for use in small conditioning rooms, test rooms, offices and residences. It not only circulates air as an electric fan, but also humidifies and cools it, and removes dirt and tobacco smoke.

Schaum & Uhlinger had a fine exhibit of Jacquard silk looms running and also showed one of the latest extractors.

The Universal Winding Company had a very attractive booth in which were shown their No. 90 machine quilling silk for broad looms, and the No. 10 winding shuttle bobbins for ribbon looms. The Franklin Process Company had a model of their dyeing machine in this space.

The Stafford Company of Readville, Mass., had their silk looms in operation, one of them weaving spun silk with Schaffe filling spun by the American Silk Spinning Company. Roland Mackay was in charge of the exhibit.

A. P. Villa & Bro. had a very attractive booth showing their spun silk on cops and cones.

The U. S. Conditioning & Testing Company showed specimens from their laboratories together with their testing appliances.

The Steel Heddle Manufacturing Company of Philadelphia had a loom on exhibition equipped with an 8 shaft "silk duplex" harness operated by the Sauquoit Silk Company. They also showed the Simplex drawing-in machine and a great variety of steel heddles, steel harness and reeds for which they have made a reputation.

The Tolhurst Machine Works of Troy, N. Y., showed their fans and extractors, in charge of F. A. Tolhurst.

The S. K. F. Ball Bearing Company, in addition to the display in its booth, advertised its product in the machinery exhibited by Atwood Machine Company and Johnson-Van Vlaanderen. This was also true of the General Electric Company and Westinghouse Electric & Mfg. Company, who had their individual motors attached to much of the running machinery.

Mason Machine Works of Taunton, Mass., showed their latest model looms running on broad silks.

The Textile Finishing Machinery Company of Providence, R. I., showed in an attractive way their many specialties for the dyeing and finishing of silk.

H. W. Butterworth & Sons Company showed one of their latest improved tentering machines. This machine was very striking, being covered with nickel plate.

MADE IN AMERICA

By IDA M. TARBELL, in the New York Evening Sun

I have always held the thesis that American women ought to take a more conscientious interest in the productive activities of this country. We American women have failed frightfully in certain ways. First of all, we do not consider the quality of the goods we buy as we should, neither in cloth nor in literature, nor in many other things as well. We are really, for the most part, very unintelligent as buyers; if a thing looks good we buy it without knowing if it really is good. We should know what makes it good or inferior or poor if we would do our duty as consumers toward keeping up the quality.

Again, we have failed in patriotism. We have loved imported things and have not been proud of American products. This has reacted on the producers, who have not had the support and encouragement of the American people.

I don't believe in erecting a stone wall and saying, "No more importations," but I do believe that we ought to have more interest in home products—to be eager to have them and have them improved.

We are unthinking; we lack pride in the products of our own land, and that attitude does not mark us as good patriots.

Women are the greatest consumers and buyers. If we were to take that business of ours seriously we can't measure what we could do. We are weak and unpatriotic quite unthinkingly, not purposely.

Our mothers and grandmothers fifty years or more ago considered quality. In their day cheap cotton was immoral and cheap imitation lace was something to be spurned, cast out of the house. When we do not care whether materials are good or not as long as they look good, that reacts upon the character of the producers, not only upon the man at the top, but upon the workmen as well.

If the men are forced to make flimsy cotton with slovenly thread and the imperfections are glossed over so that they will not appear to the casual observer, if the cotton is weighted with starch and glue to make it tip the scales at the proper mark and the workman knowing this knows also that it is sold as so many pounds of good quality cotton—what must be the moral effect upon him? And suppose his employer hears that one of his workers doesn't pay his bills or is cheating some one, how can he face the man with such an accusation, knowing what he is daily teaching him.

Women have no right to buy any adulterated goods, not only so that they do not cheat themselves, but in order not to uphold the cheating of all people. The question is as wide as the country, and it is not a legal question. Laws may be made, but they are not worth a snap of your finger. Women must insist on honest weights and measures; it is a question of everlasting care by those who handle and use the goods.

The Cotton Crusade is a splendid thing. Indeed I will have a cotton evening gown and other cotton dresses, too.

The great thing about this Cotton Crusade is that it will make people think about what is being done in this country; what is being really done in the production of cotton of all grades in our mills.

The rich woman who wants very fine goods, such as Swiss embroidered cotton, for instance, might have it made here. Why not? She wouldn't hesitate to order it made abroad. I have known a woman to have a rare old brocaded silk imitated at an enormous expense at Lyons. Our manufacturers here could make rich, beautiful things if they had any stimulus. They don't make cheap materials from choice; they long to make fine soft fabrics, but how can they, they ask, when American women will not buy expensive domestic goods, but insist upon the foreign mark? In the mills where they do not know how to make beautiful things because they have had no encouragement to learn to do so, they could be taught very easily. Let them send men abroad to study the foreign methods which they in turn can teach our own workmen, or let us bring artisans over from the other side to teach the workers here. We should encourage American designers, too.

Just imagine what it would mean were American women to visit factories and workrooms of our own manufacturers and designers with ideas and suggestions, designs

of their own to offer, perhaps—and generous orders! Why should all that stimulus go to Europe when we need it here at home?

Here is a great chance for development on the side in which a woman is more powerful than in any other thing—she is the great consumer—the choosing lies with her. She holds a strategic position; she can't get away from it; she has to do the buying for herself, her children and her house.

She needs knowledge, judgment, financial training and an understanding of quality and value to do that work of hers well. She could demand durability, taste and all that is included in quality. She could get it, too, and drive cheap, adulterated stuff out of the market—she is one of the greatest of economic powers in the world today.

Some people claim to have no interest at all in such a matter as the manufacture of cotton because they have vague, lurid notions of the exploitation of men, women and children in the textile mills. This is true, of course, in some cases, but it is so easy to believe in such exploitation. We get things out of proportion so badly. Excitement and emotional strain warp judgment and in our horror we can see nothing except the exploitation to which our attention has been called, but this is by no means universal. Some of the finest communities of our country are built up around our textile mills and carry on their work on the highest plane.

Our great duty, it seems to me, is not just to America, but to the world, and it is to keep everybody at work, to keep one great country at least busy with the affairs and pursuits of peace.

Now is the time for American women to discover and exhibit their real patriotism, the patriotism that means serving her own land loyally and intelligently and giving steady, proud, encouraging support to the industries of the United States of America.

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During the year 1913 there were 948,830 pounds of cotton cloth imported into Colombia through the port of Barranquilla, valued at $230,229; and 3,217,942 pounds of cotton yarn, valued at $727,080, according to the customs records at this port.

AUTOMOBILE TIRE FABRICS

BY ALVIN KINGSBACHER

(Continued from September.)

This is an important point in the construction of tire fabric. It is obvious that if the difference is too great, the filling, when the fabric is subjected to a strain, will arrive at its straight length before the warp, and will consequently weaken or break before the straight length of the warp is reached. When the percentages of crimp or bend in the warp and filling are about equal or within 5 per cent. of each other the warp and filling will tend to reinforce each other. In my capacity as fabric inspector I have analyzed so-called tire fabrics which had 32 per cent. take-up in the warp and 7 per cent. stretch in the filling. The difference of 25 per cent. made them totally unfit for use in tires, although the fabrics were in every other respect perfect.

Building fabric is used in various grades, but the construction remains the same. Sakellaridas, or cotton grown in Egypt from Sea Island seeds, is a material that has become very prominent. The staple is longer and stronger than Sea Island, but isn't quite so elastic. In color, it is a yellowish white, a compromise between Sea Island and Egyptian. Long Staple Sea Island, combed Egyptian and carded Egyptian are also used in great quantity, chief and most important of which is Sea Island.

Strength obviously is the paramount feature in a tire fabric, and upon this factor there cannot be put too much emphasis. Every tire manufacturer, even though he has no fabric inspection department, has at least a tensile strength testing machine. They have various ways of testing, and each results in a different standard of strength. For example, breaking a 3-inch strip in a 2-inch jaw is virtually testing two inches of fabric, but will yield a higher strength test than if just two inches are tested. This is because the two inches in the former case are reinforced by the threads adjacent, although not held in the jaws of the machine. The standard of strength which I will give is based on a different method of testing and yields a lower but truer breaking strength. A piece of fabric is unraveled down to one inch, rep-

resenting in number of threads the exact texture of that inch. This strip of fabric is placed in the jaws and tested for strength, and can indicate no greater strength than the exact number of threads in that inch actually possess. According to this method of testing we arrive at the following standard for strength in building fabric:

	Warp	Filling
Sakellarides	340	360
Sea Island	310	320
Combed Egyptian	275	285
Carded Egyptian	260	270

A question may arise as to the cause of the difference in warp and filling strength. When it is remembered that the warp is woven under considerable tension, this difference in strength is readily understood.

The breaker fabric is applied on the tire just beneath the tread, and its purpose is to protect the building fabric and to distribute the shock that the tire necessarily receives on the road, over as great a surface as possible. There are many and varied constructions of breaker fabric, each manufacturer having his own particular weave and construction. The average breaker fabric, if such there be, is somewhat similar in construction to the building fabric in respect to the yarns. The texture is very much lower in order to permit large openings in the fabric to accommodate more rubber than the other fabrics. The weight of the fabric varies, of course, with the construction, but usually is somewhere around 10 ounces to the square yard. Twelve ends and thirteen picks per inch give the necessary openness to the fabric. The weave will vary anywhere from a plain weave to a mock leno. It is made of Sea Island, combed Egyptian or carded Egyptian. It is difficult to set a strength standard for this fabric, as any change in texture, weave, or yarns will greatly modify any standard which may be placed upon it. However, with a construction such as is outlined above the breaking strengths would be as follows:

	Warp	Filling
Sea Island	160	180
Combed Egyptian	140	155
Carded Egyptian	115	130

The chafing fabric is used on the side walls of the tire, where more flexibility is required and is of necessity a lighter fabric. It is a plain weave weighing 9 ounces to the square yard. The yarns are 4/22.5 or 4/23. The gauge or thickness is .022. There are 34 ends and 34 picks to the inch. It is made of Sea Island or combed Egyptian and the breaking strengths are as follows:

	Warp	Filling
Sea Island	155	170
Combed Egyptian	125	140

The other fabrics, osnaburgs, sheetings any tapes, need no particular mention, as they are standardized fabrics and differ in no respect from the fabrics that are on the market today.

Before discussing the inspection of the tire fabric, I want to touch upon some of the precautions that are taken in the mill in order to turn out a perfect fabric. The spinning of the yarns is, of course, an important step in the work, and it follows that unless the maximum strength of the cotton is secured here the succeeding processes of manufacture cannot yield a suitable tire fabric.

The twisting of the single yarn into ply yarn is not such a simple problem as it appears. When 11 single threads are twisted into one, there is always a possibility of one or more threads breaking and the twisted yarn continuing in its whirly course with a fewer number of component threads than the requirements demand. This feature is known as "dropped ends" and is a serious weakness when found in the fabric. It is essential that every piece of yarn should have its required number of component threads its entire length; and to twist it with this unfailing accuracy involves the human element more than the mechanical, as the result depends largely upon the skill and alertness of the operatives.

Throughout the entire handling of the yarn and fabric all contact with oil, dirt or grease must be avoided. Rubber will not adhere to an oily or greasy fabric and the tire manufacturer is very particular in regard to the cleanliness of the fabric which he buys. The mill runs its looms on all grades of tire fabric and it is not always easy to keep the different grades of yarn separate. A weaver may be running one loom on Sea

Island and another on Egyptian and may inadvertently mix the bobbins, weaving into a Sea Island fabric one or more bobbins of Egyptian yarn. Such a fabric is said to have "mixed filling" and is generally rejected by the fastidious fabric buyer.

It is important that there be no broken or knotted threads. When a filling thread breaks the pick is pulled out entirely and the loom started with a new pick in its proper shed. In the case of a warp thread the yarn is spliced; that is, two or three component threads are knotted at a time in different places so that the binding of the broken yarn does not make a bulky knot. There must be no holes in the fabric, and everything about the fabric must be even and uniform. After the weaving comes the mending, burling, mill inspection, finishing and packing. The fabric is rolled, and wrapped with paper and burlap for shipping.

The fabric, being a plain weave and of heavy construction, appears to most people as a very simple one, but this idea is abandoned when the number and diversity of tests which the fabric must undergo at the tire factory is represented. These tests may be divided into two classes: the physical and the visual inspections. The physical tests include tests for strength, weight, thickness or gauge, texture, take-up, contraction of filling and water content. When these physical tests are made and found satisfactory the fabric is run over an electrically lighted inspection perch.

THE SOUTHERN NEW ENGLAND TEXTILE CLUB

The October meeting of this club was held at the Narragansett Hotel, Providence, on October 24. About 250 members were present, this being a record attendance. There was a reception by President Dexter and the invited guest, Congressman J. Hampton Moore. The first speaker at the banquet was State Senator Beeckman who is the Republican candidate for governor of Rhode Island. He laid emphasis on the disastrous effects of the present tariff and urged his hearers to unite in support of protection to American industries. President Dexter then introduced Congressman Moore, who spoke in part as follows:

The people of New England have been noted throughout the country for their ability to take care of their business, but they are woefully slow in securing legislation that will be for their benefit. New England lies in a pocket of the country, far from the center of population. You have to pay to get things in and to get things out. This is evidenced by the statement of the Boston Chamber of Commerce that New England pays $70,000,000 annually for freight on the 30,000,000 tons of coal that she uses each year.

Up to two years ago we were all doing well, especially the manufacturers of New England. At that time we had a national protection to save us from the cheap labor and low overhead costs of the factories of Europe. Apparently the people of the manufacturing centers were too much interested in building up other sections of the country, they had too much money in the bank or invested in stocks and bonds, for there came a change and a new order of things was voted into being. A Congress was elected on a split ticket which the people said would never hurt them, and that Congress has been raising havoc with the industries ever since that time.

Immediately the new party came into office there was a cry for a change in the methods of doing business under which we had grown prosperous. It was argued that we did not need the protection which we had been getting by men who presumed to know. At that time these men did not discuss the efficiency game which they have been talking about in more recent times. It has only been lately that members of the present administration have been going about telling manufacturing men that what they need in their business is not protection but efficiency.

I know the present Secretary of Commerce. I sat in Congress with him and I like him as a man. But there is no man in this country who is so proficient at running the other fellow's business as the present Secretary of Commerce. Apparently what you need is not protection from the cheap labor of Europe, not protection from the low overhead expenses of the foreign manufacturer, but more bookkeeping. If you have more bookkeeping, then you should make more money. You should take yourselves into a corner and argue with yourselves about the conduct of business. Do unto your competitor what you would have your competitor do unto you, but don't do it first. Invite your competitors into your office and tell them what you are doing and how you are doing it. This is a peaceful and prayerful administration and all you need is more bookkeeping.

I have here several copies of bills which have been introduced into Congress for the relief of the cotton planters of the South. And for what purpose? Simply to protect them from the loss of profits. One of these bills proposes to deposit in the banks of the South for loans to the cotton planters $500,000,000, the rate of interest to be 3 per centum per annum. Another bill proposes less money, but it will all come out of the Federal reserve if any money is sent to the South. And these things are proposed to protect the Southerner from the loss of profit alone.

Three years ago the cry which turned many a vote toward the Democrats was that of "special interests." This cry changed Congress and took New England off its feet. But the New England Democratic Congressman is like the fifth wheel in a wagon. He is not allowed to have any say in the legislation which is put through that amounts to anything, and he is looked upon more as an interloper than anything else by the Southern Congressmen.

STOPPAGE OF GERMAN SUPPLIES OF DYESTUFFS

From the Manchester Guardian

It is becoming clear to commercial people generally, as it has been clear for long enough in the dyeing trade, that the problem that has been raised by the cutting off of the supply of dyestuffs from Germany is almost the most difficult of all the industrial problems raised by the war. In the British dyeing trade immediately the question is not so much the "capture" of the German chemical industry as the problem whether or not the trade will itself be able to go on during the war, now that the great German firms have ceased to supply it with dyestuffs.

The present predicament was foreseen from the beginning, of course, and a great deal of attention has been given to it during the last two months. A Board of Trade Committee has been appointed to go into the matter; a committee has been formed by the dyestuff users of Lancashire and Yorkshire; there are rumors of a new fine chemical syndicate, with which two famous names are connected; and there has been endless discussion among dyers and manufacturers. Nobody pretends to see his way through yet, but the discussion has gone far enough to outline itself in two policies—the first, the policy of devising some sort of emergency organization to tide the trade over until the end of the war and the German chemical industry is supplying England again; the second, the policy of making a bold attack on the German industry, on such a scale as to attempt to displace it permanently. The difficulties of the larger scheme are acknowledged by its partisans. It would need a capital of millions—rather vague, but certainly considerable number of millions; and, as we should not have the accumulated works' experience of the German, it would be at least three years before British production was anything like so efficient and economical as the large scale production of the German firms. If the war were to come to end before this stage had been reached the industry would be exposed to the competition of the German firms, and the capital might be lost. The fear of this is responsible for the suggestion now being made in some quarters that a State subsidy, or an import duty system, should be established to guarantee the existence of the industry until it had found its feet.

GERMAN PATENTS IN THE WAY

There are in Great Britain one or two chemical firms, not engaged in the color trade, which are comparable in scale to the German firms, and the suggestion has been made that they would be the natural leaders in any attempt to build up a new industry. A member of one of these firms, in offering an opinion on the matter, put down as hopeless any such undertaking as the replacement of the German chemical industry. "It would not have a dog's chance," he said, "and it would not be worth while to make the attempt. In the first place, the whole field is covered by German patents, and all that anybody would do would be to work on German patents until the war was over. What would happen then?"

"Moreover, the people who talk of building up an industry to compete with the Germans cannot have any idea of the amount of capital that would be needed. The amount of capital in the German firms may be anything up to hundreds of millions. And if we wanted an industry like the Germans we should need a research system like the German research system, and we have not got anything like it. We ourselves have been approached by the Board of Trade to see if we could do anything in the way of turning out products that have been coming exclusively from Germany, but we have had to tell them that we should not be the slightest bit of good to them. We have not got the plant, for one thing; and, for another, many of our laboratory staff are away in the army. No, we shall have to do the best we can until the war is over. It ought to be possible.

There are lots of things we can make for ourselves—the vegetable dyes, and so on. As for the rest, ladies will have to do without all those prettily dyed things that are dyed with vat colors, and, generally, people will have to do without what they cannot get."

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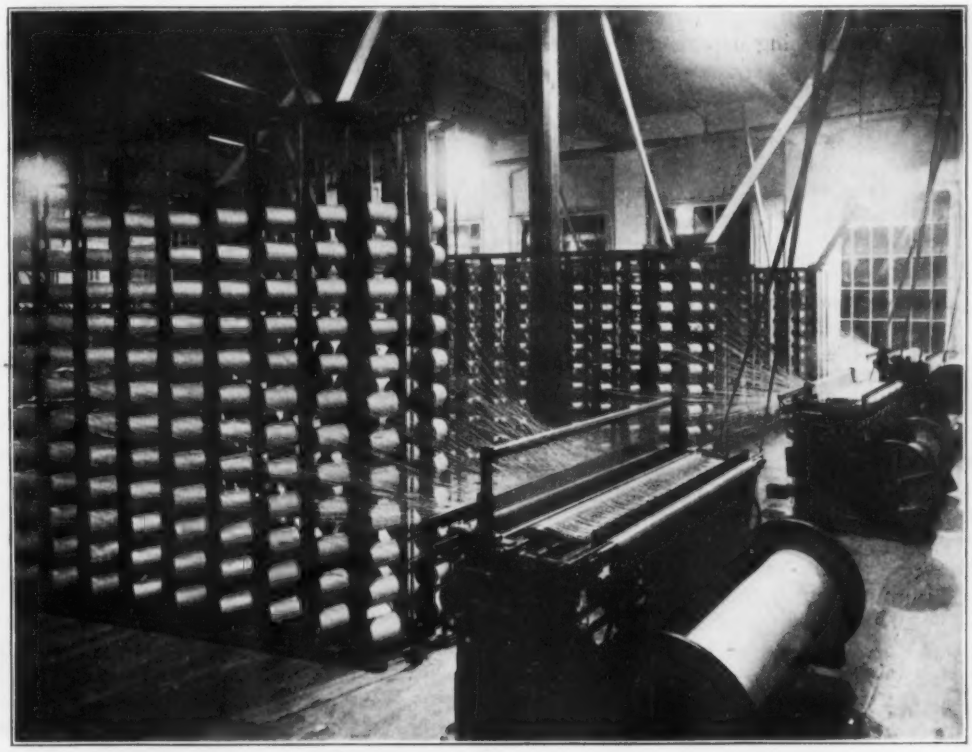
LIGHT AS A FACTOR OF EFFICIENCY

BY W. A. D. EVANS

In all manufacturing processes, the one object is to produce goods at the lowest possible cost, consistent with the quality desired. The cost of the finished product depends upon the cost of the raw material, labor and the indirect fixed charges. With the first of these, this article has no direct relation, while the functions of the remaining two will be discussed.

From the reports of the census for the year of 1909, the total production of textiles (which embodies cotton goods, knit goods, woolen goods and silk) was valued at $1,461,427,000. To produce this raw material valued at $871,887,000 was consumed and used and 804,315 wage earners were employed.

For each employe there is invested in the plant, equipment, etc., approximately an average of $1,950 and each one is responsible for an average of $1,082 worth of raw material per year, to which is added a value of $733 at an average expense for wages and salaries of $407. The average amount of horse power that is supplied to each employe is 2.3.



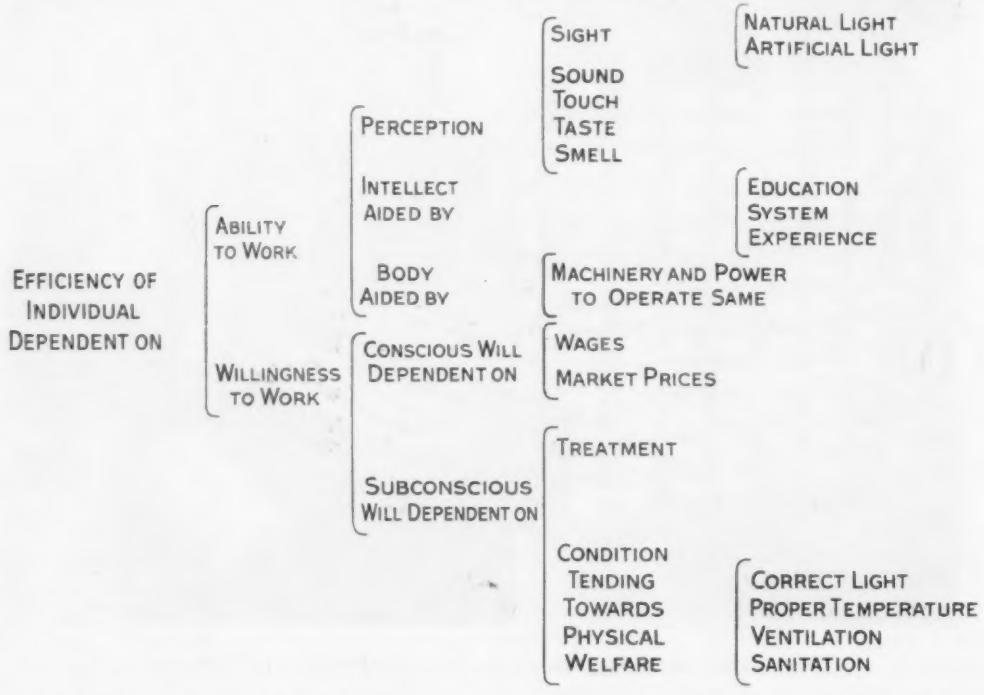
SHOWING LIGHTING THAT INCREASES BOTH THE WILLINGNESS AND ABILITY TO WORK

Figuring on a different basis, it is found that to produce the above amount of goods that 65.6 per cent. of the total expenses is expended for raw material, 26.4 per cent. for wages and salaries, and 8.2 per cent. for mis-

cellaneous expenses, which may be assumed to be "Indirect Expenses."

For the manufacturer to increase his profits, one of two things is possible, either decrease his wage expenses and indirect expenses and produce the same amount of goods, or increase his raw material consumption and produce more goods with no increased cost for wages, and only a slight indirect cost. Both of these suppositions depend primarily on the wage expense or the labor item. The condition of producing work with labor depends entirely on the efficiency of the individual. F. B. Allen has graphically shown the relation of shop conditions to producing department efficiency.

The following demonstrates forcibly this condition:



It will be seen that both the willingness to work and the ability to work depend in a great degree upon light. If an employe cannot see properly, it undoubtedly depreciates his ability to work, and slows down the production, and moreover, if his surroundings are dark and if it requires more effort on his part to perceive different operations, his willingness to work is impaired and consequently production is not up to the limit.

If with no increase in labor, and by proper lighting all textile mills the production could be increased only 1 per cent., it would mean the enormous sum of $14,614,270 added to the total production for the year of 1909, or an average for 4,535 establishments of $3,220. It would therefore seem that the question of lighting was an extremely important one to the average textile manufacturer and careful consideration should be given to the proper planning of a lighting system for a mill.

Up to about ten years ago, when a manufacturer or an engineer designed a mill, when the lighting question was considered, either one or two systems were available, the open gas burners or the individual incandescent carbon lamps. Today, both of these systems are obsolete and have been discarded in most of the older mills, and are never recommended for new mills.

At the present time, gas is practically eliminated for mill lighting on account of the convenience of electric lighting, and the presence of an increased fire risk and

greater heat in a surrounding atmosphere in a gas installation. Even with the low cost of gas in some localities, electric light can be produced more economically with the high efficiency units which are now available for mill lighting. Therefore, this paper will be confined to electric lighting.

By referring to the efficiency diagram, it will be noted that willingness to work depends on "correct light." The question then resolves itself into what is "correct light" for mill work. There are certain fundamental characteristics which all lights should have. Unfortunately they do not all have them and it is necessary that a system be adopted which will be as free from faults as possible.

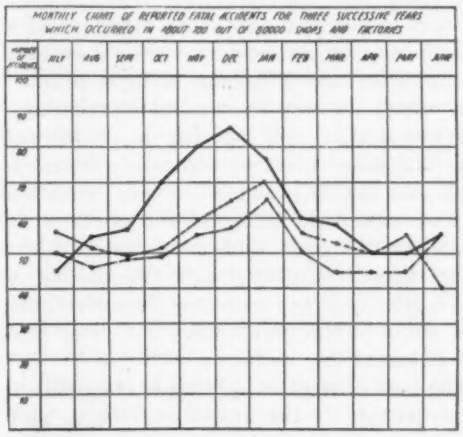


FIG. 2

Light, to be correct, should be of such intensity that an operator can work without straining the eyes, and yet not be of such brilliancy that the pupils contract to such an extent that the eye cannot see properly. It should be free from glare, and have good diffusion with the absence of flicker. It should be of such a color that the best vision is obtainable, and should not cast sharp shadows. Last, but not least, the current consumption and maintenance should be as low as is consistent with good practice.

The intensity of illumination required for mill work depends on a number of different factors, dependent upon the class of work the eye can see fairly well from one half foot candle up to fifteen foot candles. The class of work primarily governs the necessary amount of illumination and the color of the goods worked on also determines the necessary intensity, light goods requiring less illumination than dark goods. The texture of the goods also is another factor which enters into the necessary intensities, fine silk requiring a great deal more light than coarse worsteds.

The following table shows rough average figures for different classes of work, the lower figures for light coarse work and the higher figures for fine dark work.

Operation	Foot Candles
Receiving and opening bales	0.8 - 1.5
Opening and lapping	1.0 - 2.0
Carding	1.5 - 2.5
Drawing	1.5 - 2.5
Roving and spooling	2.0 - 3.0
Warping	1.5 - 2.5
Slashing	2.0 - 2.0
Drawing in	2.0 - 4.5
Weaving	2.0 - 5.0
Dyeing	2.0 - 3.0
Inspection	5.0 - 10.0
Sewing machines	3.0 - 6.0
Sewing by hand	4.0 - 10.0
Shipping	2.0 - 3.0
Packing	2.0 - 4.0
Washing and combing	3.0 - 4.0
Twisting	2.0 - 3.0
Warping (woolen)	3.0 - 5.0
Weaving	4.0 - 8.0
Perching	8.0 - 15.0

It will thus be seen that the lighting of a mill cannot be accomplished by simply adopting a certain number of outlets for the entire mill and assuming that they will meet all conditions. Either there will be too much light in one portion or too little in another. Before a mill can be properly lighted, a careful study should be made of all conditions which enter into the manufacture of the goods, and layouts made accordingly with the idea of providing the correct amount of light. What will do for one mill will not always do for another and each plant should be considered independent of every other.

After determining the amount of light necessary, other factors which enter into correct lighting must be considered. Probably, the most important of these is glare, and more and more attention is being paid to this phase of the lighting question. Glare is "bright or dazzling light" and not only

cuts down the ability of the eye to see accurately, but is also apt to produce eye strain. It should therefore be avoided as much as possible. The glare occasioned by the source of light depends in a large measure on its intrinsic brilliancy, that is, the amount of candle power per square inch given off, which depends upon the temperature of the illuminant.

The following table given by Ives and Luckiesh shows the candle power per square inch of modern illuminants.

Carbon Arc (Crater)	84,000
Flaming Arc	5,000
Nernst glower	3,010
Tungsten (1.25 watt C. P.)	1,060
Carbon Incandescent (3.5 watt C. P.)	400
Welsbach mantle	31
Cooper Hewitt tube lamp	14.9
Kerosene flame	9

By use of proper shades and globes the brilliancy of arcs and incandescent lamps can be reduced materially, and also by frosting the brilliancy of the tungsten lamp is brought down to a nominal figure. The question of glare is so vital and has been the cause of so much eye strain, that no lamps of high intrinsic brilliancy should be placed in the line of vision without frosting or proper shading.

By diffusion of light is meant, the ability of an illuminant to distribute its light out in all necessary directions, thus tending to produce even illumination. A lamp in which the light source is a small point will not distribute its light as evenly as one in which the light comes from a larger source, as the light from a Nernst glower in contradistinction to a mercury vapor tube. Good diffusion from a light source is necessary as it not only insures even illumination but prevents sharp shadows.

The light used should be steady, that is, there should be no flicker. Under most conditions a flickering light is as bad as a glaring light. Where lamps flicker due to inherent features, such as in arc lamps, or due to outside conditions such as varying voltage, or the operation of lamps on 25 cycles alternating current, the pupil of the eye is continually opening and closing endeavoring to accommodate itself to the different intensities of light and fatigue results which not only depreciates the "ability to work" but also the "willingness to work."

White light, or light from the sun is considered the ideal color by which all color effects are judged. However, no artificial illuminant in commercial use has a color value which can replace daylight. Some lights will make blue look black and others make red look black, therefore, when it comes to a question of obtaining an artificial light to replace daylight, the idea of being able to reproduce daylight colors should not enter into consideration, and the only features which enter into the selection of a light from a color standpoint should be ease on the eyes and efficiency of light production which ensures economical installations.

When textile mill lighting is considered one vital point must be constantly borne in mind and that is practically every operation depends upon the ability of the operator to see distinctly each and every one of the many threads that enter into the making of the fabric, and to catch any imperfections The color of the goods does not enter into this phase of the operation.

The cost of electric lighting is insignificant in proportion to the amount of wages paid out in the textile industry, but it is rather hard to obtain any figures which will give average costs of lighting. However, if it is assumed that all departments of the different mills are lighted to an average of four-foot candles, which would be about the average illumination required for coarse weaving, which would probably allow 100 watts for each employe and figuring that all of this energy would be necessary for 300 hours of the year, the current cost averaging about 2 cents per kilowatt hour, the cost cost approximately $301,616 additional to approximately $482,586. If we figure that the cost of maintenance, interest and depreciation charges amount to 1/2 cent per kilowatt hour, we obtain a total cost of $120,646 per year. At the present time, however, probably the average lighting in all mills would be 50 per cent of the above figures, and to bring all up to this standard, it would cost approximately $301,616 additional to what is now being paid for lighting, or on a basis of $378,323,000 being paid for wages,

less than one-tenth of one per cent. It will thus be seen that the cost of electric lighting is practically infinitesimal in comparison with the cost of labor. The cost of adequate light per year based on the above amounts to only 75 cents for each employe.

It would seem then that no mill owner would hesitate at giving plenty of light to his employes for the different operations required, when the cost is so slight and chance of increased production so great.

Another side of the economical phase of adequate lighting is the safety question. It has been well demonstrated by the liability insurance companies that the number of accidents vary during the year, the greatest number occurring in November, December and January, or the months of the least daylight, when it is necessary to use artificial light most (Fig. 2). Good lighting has been taken up by them as one of the necessary safety devices and more and more thought is being given to designing lighting installations in all industries so as to obviate dark places and spots which are liable to be the cause of accidents.

With the universal adoption of Workmen's Compensation laws, the question of safety has become an extremely important one to the manufacturers from an economic standpoint. Anything that will tend to decrease the liability of accident in mills should be welcomed by the mill owner, and with this cheapness of good lighting, this phase of the situation should not be neglected.

In a recent article R. E. Simpson of the Travelers' Insurance Company, estimates that 25 per cent of all industrial accidents in the United States are due to inadequate or poor lighting.

The cotton textile industry of France (7,400,000 spindles) is chiefly located in the Vosges districts around Lille, and, to a smaller extent, in Normandy. One-fifth of the French spindleage is normally employed on Egyptian cotton, and the balance on American cotton. French mills used 1,025,000 bales of cotton during the cotton year ended Aug. 31, 1914.

COMPARATIVE YARN TABLE FOR COTTON AND SILK YARNS

The Sauquoit Silk Manufacturing Co., Philadelphia, Pa., has compiled the accompanying yarn table, showing the equivalent of denier sizes in yards per pound, dram sizes and cotton counts. A copy printed on card board will be sent on application.

ARTIFICIAL SILK		THROWN SILK			Cotton and Spun Silk Singles 840 Yds. per hank	
Deniers	Yds. per lb.	Drams	Yds. per Lb. in Gum	Yds. per Lb. in Boil off	No.	Yds. per lb.
60	74,409	4½	55,889	75,852	90	75,600
70	63,779	5½	47,628	63,504	76	63,840
80	55,806	6½	41,796	55,728	66	55,440
90	49,606	6½	37,236	49,648	60	50,400
100	44,645	7½	33,572	44,762	54	45,360
110	40,587	8½	30,568	40,757	48	40,320
120	37,204	9½	28,055	37,407	46	38,640
130	34,342	9½	25,924	34,565	41	34,440
140	31,890	10½	23,814	31,752	32	31,920
150	29,764	11½	22,260	29,680	35	29,400
160	27,903	12½	20,898	27,864	33	27,720
170	26,262	13	19,692	26,256	31	26,040
180	24,803	13½	18,618	24,824	29	24,360
190	23,497	14½	17,655	23,540	28	23,520
200	22,323	15½	16,786	22,381	27	22,680
210	21,260	16	16,000	21,333	26	21,840
220	20,293	16½	15,284	20,378	24	20,160
230	19,411	17½	14,628	19,504	23	19,320
240	18,602	18½	14,028	18,704	22	18,480
250	17,858	19	13,474	17,965	21	17,640
260	17,171	20	12,800	17,067	20	16,800
270	16,535	20½	12,337	16,449		
280	15,945	21½	11,907	15,876	19	15,960
290	15,395	22	11,636	15,515	18	15,120
300	14,882	23	11,130	14,840		
310	14,401	23½	10,894	14,525	17	14,280
320	13,951	24½	10,449	13,932	16	13,440
330	13,529	25	10,240	13,653		
340	13,131	26	9,846	13,128		
350	12,756	26½	9,663	12,883	15	12,600
360	12,401	27½	9,309	12,412		
370	12,066	28½	8,983	11,977		
380	11,749	29	8,827	11,769	14	11,760
390	11,447	30	8,533	11,378		
400	11,161	30½	8,393	11,191	13	10,920
450	9,921	34½	7,421	9,894	12	10,080
500	8,929	38	6,737	8,983	11	9,240
550	8,117	42	6,095	8,127	10	8,400
600	7,441	46	5,565	7,420	9	7,560

Cotton 2-ply, 3-ply and 4-ply has 1/2, 1/3 and 1/4 the number of hanks and yardage per pound, its counts and numbers indicate.

For instance 1/10 = 4200 yards to the pound, 3/10 = 2800 yards.

Spun Silk in 2-ply, 3-ply, etc., has the number of hanks per pound, and yardage its count indicates.

For instance 10/1 = 8400 yards to pound, 10/2 the same, etc.

Thrown Silk loses in dyeing, in average 25 per cent., hence 1 pound or 16 ounces grey will give 12 ounces dyed, pure dye making it necessary to add 33 1/3 per cent. to the gum or grey yards per pound to obtain the dyed yardage per pound of 16 ounces.

46 drams 5565 yards per gum pound, plus 33 1/3 per cent. = 1855 = 7420 yards per dyed pound.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

THE PREPARATION OF ABSORBENT COTTON

BY JULES GARCON

Bulletin de la Societe d'encouragement pour l'industrie nationale

Very little has been published on the manufacture of absorbent cotton. It is well known that this process consists in treating the cotton with hot alkaline solutions in order to rid the fiber of the fatty material and thus make it absorbent. About 1837 cotton wadding was proposed as a substitute for linen cloth for surgical bandages and in 1864 a French army surgeon, Auguste Touraine, connected with an expedition in Mexico, announced for the first time a formula for absorbent cotton. The actual production dates very close to the antiseptic theories of Lister. About 1879 absorbent cotton became an article of commerce. Its consumption increased very rapidly and in 1887 the process was improved so as to produce very white and highly absorbent material. When prepared with care, it absorbs about twenty times its weight of water.

The choice of the cotton has a very important influence on the quality of the finished product. Other factors besides the set of the goods must be considered. Sea Island and Egyptian cottons with their very fine and long fibers are not suited for this purpose because it is very difficult to make them absorbent. Brazilian cotton is too woolly and it is very difficult to bleach the colored grades. Indian cotton is seldom used because of the short, tender and dirty fiber. The best grades for absorbent cotton are New Orleans, Texas, Allen Seed, Mobile and Benders of middling grade. The cotton should be as clean and white as possible. Unripe fibers and those to which the seed is attached must be removed carefully because they do not possess the cellular canal and consequently cannot be made absorbent. They become brittle when treated chemically. Cotton card waste is used with success for absorbent cotton, but it does not give a product of the first quality. Cotton can be bleached without being made absorbent and, inversely, it can be made absorbent without being bleached.

On the continent of Europe cotton is made absorbent by removing all traces of fatty material with pretroleum ether, bisulphide of carbon, or with a simple treatment in alkaline solution without going so far as to bleach the fiber.

The principal operations for preparing absorbent cotton are:

1. Mechanical operations. Sampling, assorting, cleaning, picking, carding. As it comes from the card it is run in the form of a web, providing absorbent wadding is required; for absorbent gauze it is run from the card in the form of a ribbon.

2. Chemical operations. The cotton, cleaned as well as possible by previous processes, is placed in a boiling kier, where it is washed and then treated with an alkaline solution to saponify all that is not cellulose, such as wax, fatty matters and pectose. The solution is then drawn off and the cotton is bleached to remove all coloring matter and by-products of the alkaline treatment. It is then dried, immersed in acid and then dried again. It is then submitted to a second treatment with an alkaline solution, after which it is again dried. It is then treated with acid, neutralized and dried. In all, twelve processes.

3. Mechanical operations. Cleaning, drying at 105°, carding, winding on spools and sterilizing.

Absorbent cotton is treated as follows:

1. The cotton is combed, drawn, spun, woven.

2. Chemical operations. Same as for wadding.

3. Mechanical operations require a tentering machine and a mechanical folder. The twelve phases of the chemical operations

with the final sterilizing are of the most interest.

The chemical treatment is very harsh and there is no bleacher who treats cotton with so much severity. Absorbent cotton is really but over-bleached cotton. In the course of the twelve operations it is necessary to take some precautions. The cotton should not be packed in kiers so tightly as to prevent the free circulation of the liquor. The danger of overcrowding is especially great with short cotton which does not possess much elasticity.

The essential operation is the treatment with an alkaline solution. This consists in boiling the cotton with a one per cent. solution of caustic soda. The boiling is carried on at low pressure for twelve to forty-eight hours. There is no advantage in treating it in a vacuum. The alkaline solution destroys the cellulose. Kilmer found the loss to be from 4.41 to 5.71 per cent. after boiling one-half hour, and a loss of 5.08 and 7.33 per cent. after boiling for one hour in a 2 1/2 per cent. solution.

The alkaline process is followed by bleaching the cotton in a solution of hypochlorite containing one per cent. of chlorine. Hypochlorite of soda is more expensive than chloride of lime, but it gives a softer, whiter and more elastic cotton. Attempts have been made to use the Thompson process, but it was found to be too expensive and it is very difficult to work large masses of cotton with it. The price of peroxide of sodium is likewise too high to be used.

Bleaching of absorbent cotton is carried as far as the fiber will stand. It is necessary that everything that is not cellulose be removed. During this process the cellulose is attacked and oxydized. This is the reason why absorbent cotton has an increased affinity for basic dyes. This affinity can often be used as a test of the absorbing power of the cotton. In fact, the absorbent fiber possesses the reactions of an oxy-cellulose.

The cotton is next washed and immersed in a 2 per cent. solution of sulphuric acid and a 1 per cent. solution of hydrochloric acid, after which the alkaline treatment is then repeated. These alkaline solutions are generally about 1/4 per cent., and the boiling should not be prolonged. The cotton is rinsed and then treated with acid to eliminate all substances that can be dissolved, such as mineral salts, iron rust, etc.

The removal of all traces of the acids is one of the most important and difficult features of the process. It is, nevertheless indispensable in order to avoid a tendering of the fiber during drying. The cotton is rinsed thoroughly in water to which is added either an antichlorine or soap. The antichlorine gives a "cry" to the cotton. Soap is preferable, but all traces of it must be removed, otherwise the cotton will become yellow. Some manufacturers leave soap in the finished product or add chloride of lime in order to increase the softness of the material and the hygroscopicity of the fiber, but such methods are always at the expense of the color. The operation is finished by a thorough rinsing and the character of the water is by no means an unimportant factor. Each fiber of absorbent cotton is porous cellulose in other words, a filter. As there are more than 150,000,000 fibers in a pound, a batch of 1,000 pounds would form a filter of great efficiency. If the water is impure the cotton will be injured.

The last operation consists of sterilizing, and it is very important. Most hospitals sterilize their own cotton, but large quantities of sterilized cotton are found on the market. For sterilizing wadding formaldehyde is used; for gauze, steam. The sterilizing is done under a 20-inch vacuum in a steel tank capable of holding 2,000 pounds of cotton. The process is carried on for two hours with formaldehyde or one hour with steam.

The medical profession employ a non-absorbent dressing which takes up the liquids by capillary attraction between the fibers, absorbent dressings, antiseptic dressings, or those that are sterilized. The antiseptics are few in number; phenol, salol, corrosive sublimate, iodoform, boracic acid, double cyanide of mercury and zinc are most frequently used.

Antiseptic gauze can be prepared dry by preparing the antiseptic in a volatile solvent, soaking the gauze in the solution and then

evaporating the excess. The wet process consists in soaking the material in a non-volatile solution, or in an emulsion, for example, of glycerine.

Antiseptic cotton is at present but little employed, for the profession prefer to use the sterilized absorbent cotton. Absorbent cotton is also used outside the medical profession in purifying by filtration a large number of aqueous solutions such as oils, syrups, milk, fatty materials, etc. Large quantities of absorbent cotton are used in the electrical industry and in the manufacture of incandescent mantles, varnish and various compositions of cellulose. For most of these uses a cotton giving the least quantity of ash after burning is to be preferred. The proportion of ash is very variable. According to the United States Department of Agriculture the average ash of six samples of American cotton was 1.37 per cent. The proportion of ash from absorbent cotton depends more or less upon the severity of the treatment to which it has been subjected. The pharmasists of the United States, Great Britain and Germany state that absorbent cotton should not yield more than .8 per cent. of ash.

The imports of hosiery into the United States during July was $219,852 against $151,105 for July, 1913, a gain of 45 per cent.

THE LARGEST LOOM IN THE WORLD

From the Textil-Zeitung, Berlin

The Saechsische Maschinenfabrik, Chemnitz, has recently built a gigantic loom, the largest ever constructed. It is a special loom for weaving paper makers' felts. In 1910 this firm built a loom, shown at Fig. 1, having a reed space of 59 feet and weighing 77,000 pounds. The loom just turned out is 16.4 feet wider, having a reed space of 75.4 feet and is the largest loom in the world.

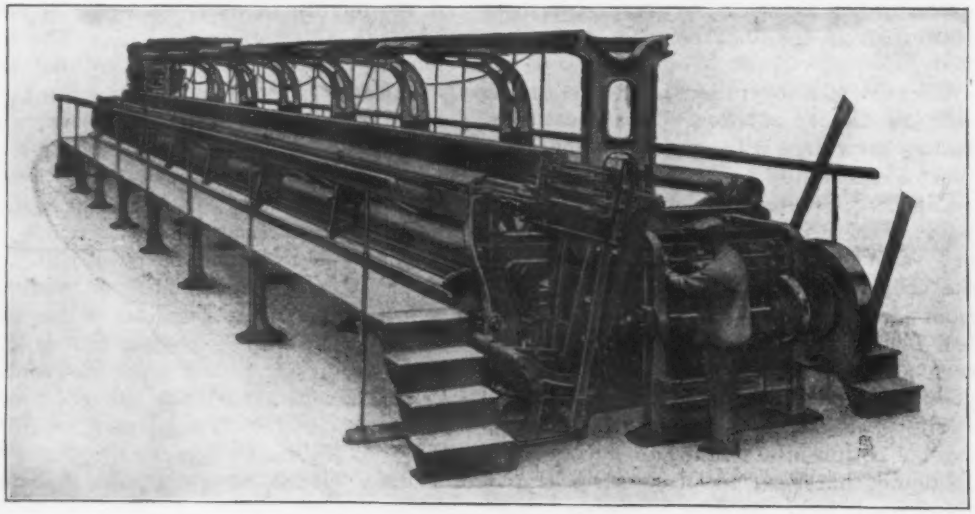


FIG. 1. THE LARGEST LOOM IN THE WORLD

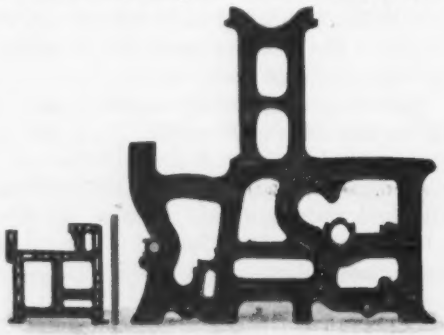


FIG. 2. THE END OF THE FRAME

The accompanying illustrations, Figs. 2 and 3, show clearly the gigantic dimensions of the loom. Fig. 2 shows the end of the frame of the 1910 loom at the right, as compared with the end of the frame of an ordinary loom at the left. Fig. 3 shows the dif-

ference between the size of the shuttle used on this loom and that used on an ordinary loom. The weight of the small shuttle is about 6 ounces, while the shuttle for the felt loom weighs 19 3/4 pounds. It is interesting to note that this shuttle, weighing 19 3/4 pounds, passes across the 1910 loom 14 times a minute, a distance of 65 1/2 feet at each pick. The 1914 loom is built for the Saechsische Filztuchfabrik Rodewisch, Saxony, which has the 1910 loom in operation.

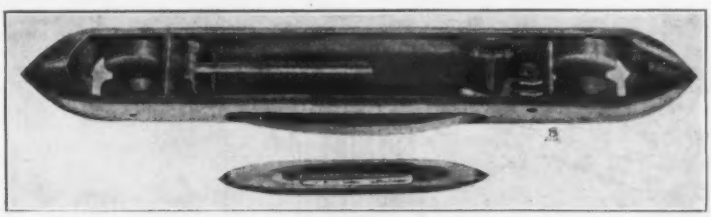


FIG. 3. A COMPARISON OF THE SHUTTLES USED ON THE LARGEST LOOM AND THAT USED ON AN ORDINARY LOOM

FRENCH COTTON MILLS

From the Manchester Guardian

M. Casimir Berger, treasurer of the International Cotton Committee and member for France, has addressed a letter, dated the 29th ult., of which the following is an extract, to the International Federation of Master Cotton Spinners' and Manufacturers' Associations:—

"Our districts of the North and the Vosges are occupied, and the entire work of all industrial establishments there is at present suspended. Heaven knows when they will be able to resume work under normal conditions. Here in Normandy we are in a somewhat better situation, as we are able to obtain a cotton supply through the Seine and to forward our yarn and cloth by way of the canals to the interior of France. Under those conditions, our weaving sheds have been able to execute very important orders for the supply of the army. Business in the spinning section will to some extent revive when the weaving sheds have exhausted their stocks of yarn and will be obliged to give out new contracts to the spinners. At present the spinning industry of Normandy works short time, which may be estimated at about 50 per cent of the normal production. Just as Lancashire spinners, so are we very much concerned as regards the position of the raw cotton market."

DETERMINING THE PICKS IN WOVEN GOODS

A German device for determining the picks woven in cloth has recently been patented in this country and is described by the inventor as follows: This invention proposes an improved attachment for looms for the purpose of determining the frequency of the shots in woven fabrics, such attachment comprising special devices for operating the counter warp threads, so as to bind the threads irregularly after a given number of shots and produce a mark. The distance between two successive marks may then be ascertained by means of a rule, which allows of reading the number of shots per linear unit.

Fig. 1 is a side view, Fig. 2 is a front view, Fig. 3 is a horizontal section on the line, A—B, in Fig. 1, Fig. 4 is a plan view of the rule.

On the shafts, c, d, are loosely fitted beside each other two worm wheels, a, b, of which the wheel, a, has one tooth less than the wheel, b. In the constructional form shown in the drawing the wheel, a, has 19 teeth, while the wheel, b, has 20 teeth. With both wheels meshes a specially designed worm, e, which, for example, may be fitted on the shaft, n, of the eccentric, and which operates to advance the two wheels intermittently. To the wheels are secured disks, f and g. The disk bolted to wheel, a, has one notch, h; the disk bolted to wheel, b, two notches, i. On these disks ride rollers, m, n, respectively, which are revolubly fitted on

pins, o, p, in a frame, k, one arm of which is extended and fitted on a pivot, r. On this pivot, r, is also fitted the lever, s, to which the pull cords are connected for raising and lowering the counter threads. This lever will therefore press the rollers, m, n, against

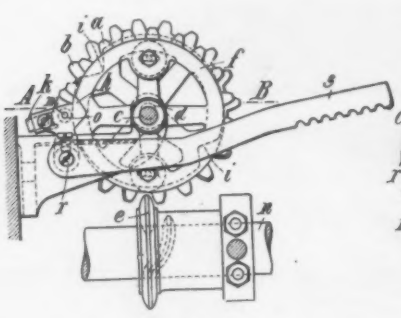


FIG. 1

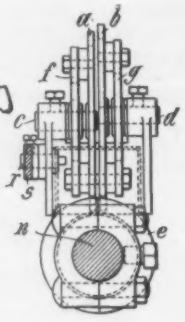


FIG. 2

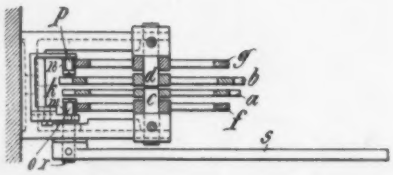


FIG. 3

the disks, f, g, so that they engage in the notches, h, i, as soon as they override the same jointly; thus at 19 × 10 teeth, or at the

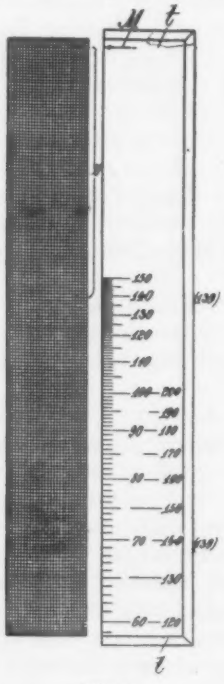


FIG. 4

190tieth shot, or, if the ratio of the worm of the loom is 1:2, at the 380tieth shot at the distance, v, Fig. 4. For ascertaining the number of shots per unit, for instance one inch, a rule, t, provided with a division mark is employed, which mark is found from the formula, 380 = v x, in which v is the distance in inches, x, the number of shots per inch. The rule is then divided on the basis of 380 ÷ v, v being given in whole figures (for facilitating the recording from 150 downward) on the scale. On the rule, furthermore, a mark, M, is provided, which is applied to a given intersecting point of the line of counters. At the next intersecting point the number of shots per inch may then be read on the rule. In the form shown the number of shots, x, in the distance, v, is 139. When the number of shots is very large, say above 150, the space between three points is measured and the result is read on the outer scale, which is found from the formula, x = 2.380 ÷ v.

The use of a worm allows of counting backward while the loom is being turned backward, in searching for shots.

A NEW NAME FOR ARTIFICIAL SILK

831 Newport Ave.,
Pawtucket, R. I.

Editor Textile World Record:

Regarding a name for artificial silk would suggest "Klistra." This product gets its name purely on account of its luster. The word Klistra is art silk reversed and in sound resembles luster, which is the most valuable asset of this product.

Yours very truly,
J. E. Buchanan.

THE GERMAN WOOL TRADE AND THE WAR

From the Leipziger Monatschrift fuer Textil-Industrie

A meeting attended by wool combers, worsted spinners, bankers and others interested in the wool trade, was held in Leipzig in September. Georg Schoenbach, the presiding officer, made the following report of a conference with the Prussian Minister of War at Berlin, regarding a number of important questions in connection with the German wool industry:

Communication by post and telegraph with Verviers and vicinity has been restored so that German merchants and manufacturers can obtain information direct regarding their property. A representative of the German War Department has been sent to Verviers to make arrangements for the resumption of work in the wool washing and public conditioning establishments so that Germans can obtain their wool. German property is classified as follows:

1. German property on which foreign loans have been made.

2. The enemies' property on which German loans have been made.

In the latter case the German lender has the property at his disposal. German citizens who have taken up their residence in foreign countries are treated as Germans. All the wool owned by the enemies' subjects is requisitioned providing it is suited for the manufacture of army goods. This requisitioned wool is to be turned over to a newly formed corporation which will distribute it to the different manufacturers of military goods in proportion to their respective orders. In this manner all of the German stocks of wool suitable for army goods will be put into process of manufacture. This corporation will carry on its business only in the public interest and with no commercial object in view. Furthermore all wool, cotton, yarn, etc., that has been shipped to Russia and which may have been sidetracked or delayed in order to make way for the transportation of troops will be shipped back to Berlin. Up to the present time (September 9) two hundred and ten carloads of wool have reached Frankfort-on-the-Oder and a large quantity is expected to follow. All of this property will be shipped to Berlin, classified and returned to the shippers. Similar regulations have been adopted for the disposal of the wool at Roubaix, Tourcoing and Lodz. As a comparison of the amount of wool needed for military purposes with the suitable stocks on hand shows plainly that the mills will not be able to supply the enormous demand for goods, spinners have urged the government to use worsted yarn for army cloth.

ENGLISH NOTES

By Our Regular Correspondent

British export statistics for the month of September reveal no interruption in shipments to the United States. Their purport is all to the contrary in the important lines of trade. Thus it is exact to say that shipments of bleached, printed and colored cottons were each twice as large as in September, 1913. Of cotton piece goods as a whole the shipment was 5.9 million yards as against the former 3.3 millions. Of worsted (exclusive of mohair and alpaca) yarn 257,700 pounds was sent as against 2,400 pounds. Roughly speaking, the quantity of carded woolens was six times more than a year ago, being 781,700 yards in place of 136,600. In worsteds and stuffs recent progress was maintained, with shipments of 2.7 million yards against 810,200. The linen trade shows a total 12.5 million yards as against 4.8 millions. In a month in which decreases were general and the total diminution was heavy, the maintenance of exports to America formed one of the most prominent features in the returns.

The effect of September business is incorporated in the table which follows and summarizes the trading of three-quarters of the year. For reasons that have been adduced upon past occasions, the table is not absolutely exhaustive of British shipments to the United States, but it covers by far the greater part of them. The quantities speak for themselves and it may be of interest to know the approximate increase in terms of money. Calculation shows that in the lines named in the table there has been during the

nine months a rise from $24,467,500 (1913) to $45,259,500. This is not very different from saying that under the present tariff importations of English goods have doubled. In view of the troubles of the time it will be injudicious to speculate as to probable movements within the remaining three months of the year. Orders for yarn have been cancelled from America on the plea that as there was no dyestuff the yarns were useless for the present. In other directions the lack of dyestuff may have an opposite effect by promoting demand for dyed goods. In the absence of the unanticipated disturbance and in view of the experience gained, it might have been expected that British exports would increase. Naturally, some time passes in finding out what can be done under new conditions. The development of fashions and the adjustment of samples to meet American ideas cannot be supposed to have reached their full effect as yet.

Textile Exports U. K. to U. S. Nine Months Ended 30 September

		1913	1914
Cotton yarn	lbs.	4,136,000	4,588,300
Cotton piece goods	yds.	29,563,000	45,971,000
Worsted yarn	lbs.	44,800	1,781,100
Woolen tissues	yds.	1,621,500	7,110,900
Worsteds and stuffs	yds.	6,111,100	25,285,100
Carpets	sq. yds.	100,000	425,900
Spun silk yarn	lbs.	519,538	517,190
Broad silks, pure	yds.	213,402	143,985
Broad silks, mixed	yds.	323,552	1,081,342
Jute yarn	lbs.	255,800	1,343,800
Jute piece goods	yds.	66,910,500	53,403,300
Linen yarn	lbs.	1,557,500	2,003,100
Linen piece goods	yds.	77,793,300	88,304,200

Parts of the commercial machinery are still sticking, with consequences which are felt in the mills. Financial accommodation is given grudgingly and bankers are not eager to discount the documentary bills by which so much of the export business is financed. Remittances from abroad, inclusive of the United States, come in slowly by reason of the adverse rates of exchange. War risks impose a 2 per cent. charge on the movement of cargo by sea and freights are 25 to 50 per cent. above the normal. Practically all external business is arranged by cable and the embargo on the use of codes means that one message costs about as much as five in ordinary times. Added to the difficulties present in the consuming countries abroad, these obstacles make a considerable handicap on the vitally important foreign trade. In the home market retail trading is returning to its regular proportions, but wholesalers in buying for the season incline to wait as long as possible over their final arrangements.

The busy manufacturers are such as have Government orders and there is excessive activity in supplying army requirements. Factory regulations have been relaxed in order to expedite deliveries and mills making heavy woolens are working even upon Sundays. The woolen, worsted and heavy linen trades are those most burdened with army orders. Of the rest it can be said in general that they are groping with their feet for a firm foundation. The silk people have been matching quantities of Continental samples and will do business upon some of them, but ten weeks of war has not established them comfortably inside the new conditions. The absence of arrivals of raw or thrown silk from abroad may become more of a trouble when trade in fabrics grows more active.

* * *

The position of the cotton industry is the most precarious of any. As the most dependent upon foreign demand its position might be bad even though there were no skeleton in the cupboard of the Cotton Exchange. Probably 40 per cent. of the machinery is standing or working intermittently. The incoming orders are a mere trickle and there are prospects of worse days ahead. The Liverpool market remains closed except for sales at a valuation fixed by a committee over which spinners have no control and the prices thus fixed fail to carry conviction in the consuming world. The fiction may serve to settle accounts as between market operators in Liverpool and New York, and to protect the interests of Liverpool bankers, but it does not give a foundation on which business can proceed. Until supply and demand have been equalized there can be no extensive business and the demands of spinners and cloth manufacturers for a free market in raw cotton are growing in strength. Business has been done by Oldham spinners in cotton imported

direct from America at two cents below Liverpool prices and perhaps direct trading behind the bank of Liverpool is the most effective form in which pressure can be brought to bear. Naturally, those with stocks on hand did not wish to see an immediate fall and find their holdings depreciated and all their contracts dislocated. The reduction of their stocks and exhaustion of their orders removes their antipathy to low prices. They argue that the encouragement lent to consumption would cause cotton to rise in value and that after a short period all would go well. The alternative to letting cotton prices sink is to buoy them up artificially, be it by means of the buy-a-bale movement, the formation of a trust to hold cotton in bulk, or by Sir Charles Macara's expedient. His advocacy of the forming of a cotton reserve is some years old. It involves the purchasing of about $350,000,000 of cotton by the British in American and British Governments and thus to stabilize prices and to moderate values in coming years when the crop may be short. Evidently the time is opportune for acquiring a reserve on favorable terms and the British Government of the day is not oblivious to the claims of finance, commerce and industry. The scheme, however, remains that of Sir Charles Macara rather than of the cotton industry as a whole and no universally accepted plan for valorizing cotton has emerged.

* * *

No need exists for schemes to buoy up the price of wool. Any wools suitable for army clothing are 10 to 30 per cent. dearer than in July and dealers have done handsomely out of anything which could be brought into the blends made of khaki or French blue-gray or Russian mid-gray, or into knit goods. The capacity of the carded woolen trade being hopelessly overtaxed resort has had to be made to all-worsted khaki and to piece-dyed as well as wool dyed cloths. The army buyers have bought such 18 to 20 oz. blue worsteds as could be got up to $1.20 limit for the use of the home service men. The rapidity of recruiting and the congestion in the mills made blankets so scarce that an appeal to householders to make donations of spare blankets had to be issued. Stocks of heavy blanket overcoatings were bought up to make emergency blankets. The wholesale market has been swept of gray winter overcoats to serve the troops until the regulation cloths can be got round. The pressure to obtain warm knit goods has been indicated by the despatch of inquiries to the United States. While some woolen and worsted mills have more army work than others, it can be said that nobody is without it, except by his own will, and that the production is booked for this year and beyond. In these circumstances it would seem that the mills ought to be making money. There are qualifying considerations. All the early orders were taken at rates dictated by despair. Many more recent ones have gone to concerns usually engaged on more profitable high class fancy goods. Much work has been taken on commission for others and it remains to be seen whether goods below the standard will be passed without difficulty. The War Office has a better business man at its head than ever before and now that khaki serge cannot be exported it is the only market for the goods.

Perhaps most money has been made in the sudden appreciation of old and depreciated stocks. Dross has been turned into gold quite unexpectedly. In one case $6,000 worth of blanket overcoating had been written down to $2,000 in successive stock-takings, but it sold for $10,000 to a dealer who would convert it into emergency blankets. The odd lots have not all sold to this advantage, but it can be seen that war is kinder to wool than to cotton.

* * *

Applications for liberty to use enemies' trademarks have been more numerous than applications for the transfer of patent rights. The disparity supports the view that a trademark is more valuable than a patent,—which point admits of no serious doubt. Numerous applications have been made in respect especially of chemical products, well known under an invented name, but barely known to the public under their scientific names. "Aspirin," "Lysol," "Salvarsan" and the

photographers' "Metal" are cases in point. The fate of the applications has varied with the circumstances, several remaining in suspense. In at least one instance a manufacturer has been found to have invalidated his own title to a trademark by allowing others to share under arrangement in a grant that has been made exclusively to him, not solely for his benefit, but equally for the protection of the public. The Court has evinced no disposition to confiscate property merely because it is enemy's property and it has sent away several applicants with the benevolent advice to start a trademark which will remain their property when the war is over.

* * *

It seems likely that the present generation has something to learn of places made newly familiar by the warfare. In distant 1301 there was a local disturbance in Ghent which drove some thousands of textile workers out of the city to Tillemont (Termonde) and Louvain. In Louvain they prospered and, according to estimates which may have been exaggerated, soon numbered "4,000 woolen drapers, clothiers or master weavers and 150,000 journeymen weavers." Textile trade has always been subject to ups and downs and the business declined later. But from the cradle of the industry came the textile manufacture of America via England. Flemings, we know, are responsible for its perpetuation, but it is not so well known that they were men from Louvain who set up the famous fine cloth trade in the West of England. At all events a West of England manufacturer of 1739 wrote, "We had our Skill from the Louvainers." Indeed there is hardly a name marked on the war map, but has its historic association with textile business. In its day, Compiegne was a great place for stockings, Seulis for cloths, Amiens for serges, Chalons for shalloons, Rheims for Serges de Berry and La Fere for wide serges. Ypres and Courtrai are mentioned in these lines of 1436 written by a jealous Englishman:

"Fine cloth of Ypre that named is better than ours
Cloth of Curtrike, fine cloth of all colors
Much fustian, and also linen cloth
But Flemings if ye be not wroth
The great substance of the cloth at the full
Yee wot ye make it of our English woll."

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A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

This Series began in July, 1911

Translated and Revised by Samuel S. Dale

Fig. 1638 shows two plain weaves.

At Fig. 1639 a plain weave is combined with a 2 up 2 down basket. Each can be woven with 8 shafts.

For Fig. 1638 the drawing-in draft on 8 shafts is 1 to 4 times, and 5 to 8 four times, a total of 16 threads.

For Fig. 1639 on 8 shafts the following drawing-in draft is required: 1, 3, 1, 4, 2, 3, 2, 4 twice; 5, 7, 5, 8, 6, 7, 6, 8 twice.

Fig. 1640 consists of two 2 up 2 down twill weaves, alternating on face and back. A very attractive checkerboard pattern is shown at Fig. 1641 and is made by a combination of a cross tricot with a tricot long.

5. Broche Fabrics

Under this head are included those cloths in which special threads are introduced in warp and filling to decorate the goods without forming a constituent part of the fabric. These threads are brought to the face only at isolated spots, being otherwise hid from view. The ground weave and color predominate on the face where the broche effect does not appear.

If the ground and broche warp have the same set they must be woven 1 ground, 1 broche, or 2 ground, 2 broche, the last named order being usually employed with twill and satin weaves. If the broche warp is set more open, 1 broche thread alternates with 2 or more ground threads.

Twill and satin broche fabrics are sometimes woven 2 ground, 2 broche picks.

When the figure requires several adjacent broche threads it is sometimes necessary to alternate 1 ground with 2 to 6 broche threads.

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FIG. 1634

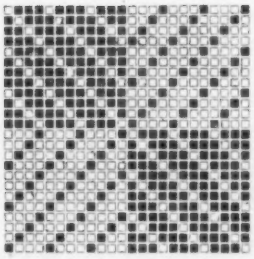
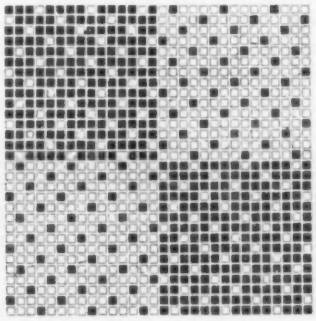


FIG 1635



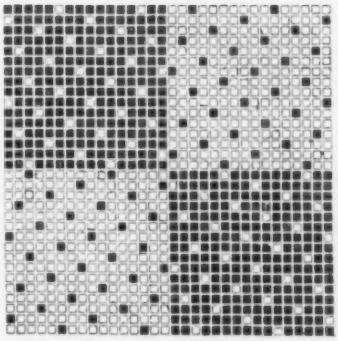


FIG. 1636

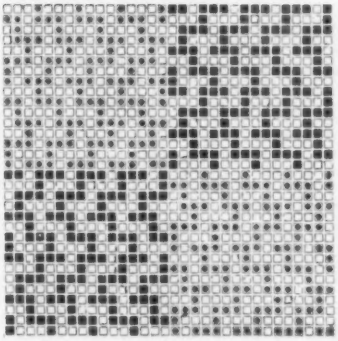


FIG. 1637

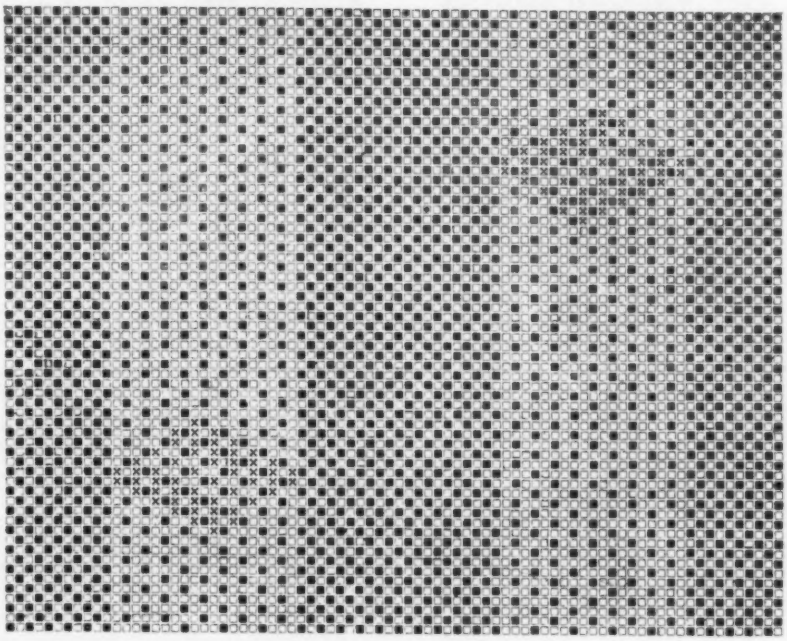
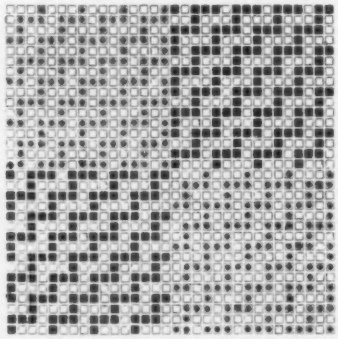


FIG. 1643

The set of the ground fabric remains uniform, and the broche threads are introduced as extra threads. For example, if the ground fabric is set 75 threads per inch and

FIG 1638



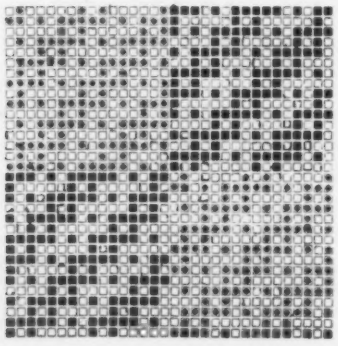


FIG. 1640

the broche and ground threads woven 1 broche and 1 ground, the set for the broche

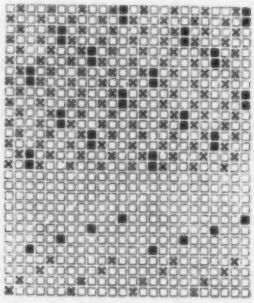
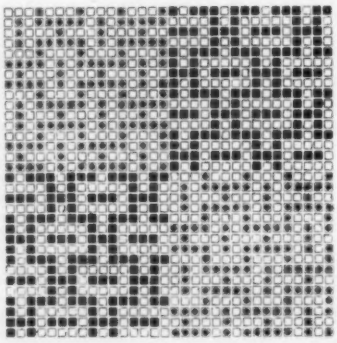


FIG 1642

effect would be 150 threads per inch. If the broche threads are in the warp they are drawn in the reed as extra threads.

If a special broche attachment is used the broche filling threads are passed over only the spots at which they are to appear in the cloth. The cloth is woven with the face

FIG. 1639



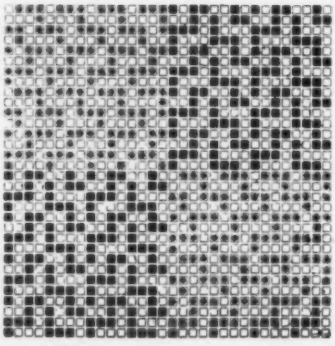


FIG. 1641

down. The effect threads are usually stitched tighter at the edge of the spot in order to increase the durability of this part of the design.

In many cases the effect threads float loosely on the back side of the cloth when not shown on the face. These loose threads are often cut from the back.

In medium and heavy cloths the broche threads are stitched occasionally during the passage from one spot where they show on the face to another. These stitchers are inserted so that the thread will not be visible on the face.

In double fabrics the broche thread is preferably concealed by being passed like a stuffing thread, between back and face.

Fig. 1642 shows broche warp threads on a plain ground. The motif for the design is a

broken 1 up 3 down twill. As the broche threads float but a short distance, no stitching is necessary.

At Fig. 1643 broche warp threads are woven on a plain ground. Owing to the long float the effect threads are woven from a separate beam.

The ground weave, Fig. 1644, is a 2 up 2 down twill; the figure threads form short lines which are arranged in the form of a 2 up 2 down broken twill. The broche threads are stitched at intervals when floating on the back.

When the float of the ground weave covers 2 or 3 threads, the broche float to be effective must cover 3, 4 or even 5 threads. When the broche float comes in a warp or filling twill, the stitching of an adjacent ground thread is changed so that the broche spot may not be obscured. An example is seen at Fig. 1649, in which the ground weave is a 3 up 3 down twill.

A similar modification of the ground weave to make the effect thread show plainly is seen at Fig. 1645, in which the broche threads are in the filling; the black squares indicate sinkers. Extra warp risers are inserted on the face pick adjacent to the broche float, causing the latter to stand out more prominently. The ground is woven with a 3-leaf broken twill for the face and a

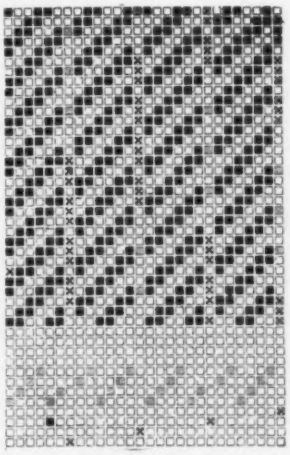


FIG. 1644

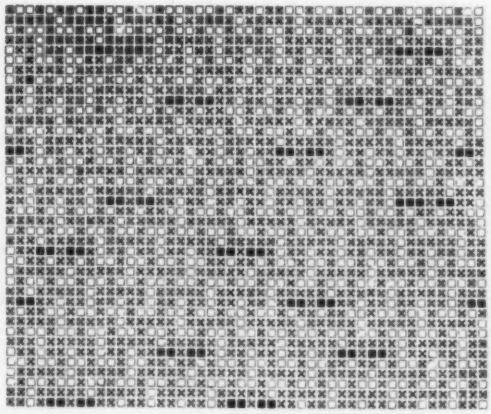


FIG. 1645

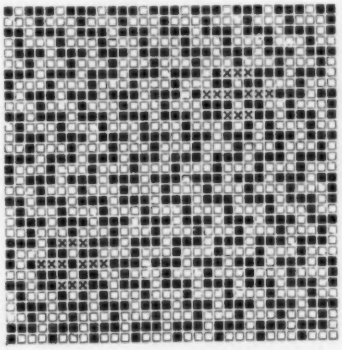


FIG. 1646

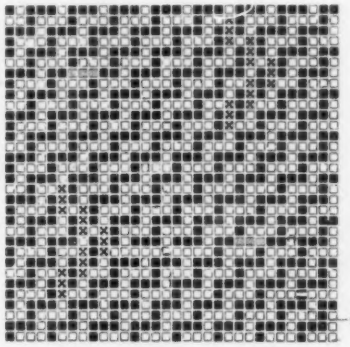


FIG. 1647

The broche effect in Fig. 1648 is formed by threads in both warp and filling, the motif for the design being a broken 1 up 3 down twill; the ground is a 2 up 2 down twill.

6-leaf weave for the back filling. The broche effect is stitched in 3-leaf order and is concealed by the back filling.

In double cloths the back filling threads sometimes serve as broche picks. The back picks that form the pattern are usually of a different color from that of the face to produce a more marked effect. An example is shown at Fig. 1646. The crosses indicate

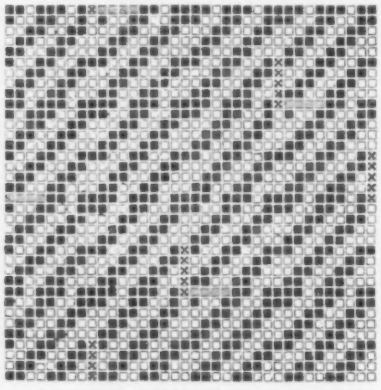


FIG. 1648

sinkers. The ground weave is a broken 1 up 3 down twill with back filling. As the back pick floats over but three threads, the same as the regular float of the face pick, it is necessary to modify the adjacent face picks to make the spot distinct.

Fig. 1647 shows a double plain cloth in which both back warp and back filling are utilized to form the broche effect. The plain face threads cannot obscure the broche float of the back threads over two face threads and consequently no modification of the face weave is necessary. The shaded squares are sinkers.

MILL EXPERIENCES

Under this head we will publish from time to time stories from practical mill men, telling of vexatious and unusual difficulties which have occurred in different branches of mill work, and how they have overcome them. We invite mill men to send us an account of such experiences. We pay, of course, for all that we use. Facts told just as you would tell the story to a friend are what we want, not fancy writing.

EXPERIENCES IN A COTTON CARD ROOM

BY TUMBLER

(Continued from September.)

I told him I thought the trouble was in the combers, that they were all run down and had a poor set of help on them. I asked him if he wanted me to get the combers in good shape again and he said he would be very glad if I would do so. I told him that if he would give me the supplies I would put the combers in good shape again. He told me to start right away and if I needed anything to ask for it and he would get it for me.

The following Monday morning after I finished my work I told the section hand on the combers to get the tools ready and about 8 o'clock I started on the first comber. The first thing I did was to break out the laps and run the cotton through the comber. After the cotton had all run through I went to the back of the machine and pulled the waste boxes away, then took an iron comb that I had made and cleaned the revolving brushes. After cleaning the brushes I stopped the comber and pushed the belt off to prevent any accident. I then took off the different parts, laps, plates, top feed rolls, leather detaching rolls, brasses, sliver pans, calender rolls, top combs, nipper knives and cushion plates. I went to the back of the

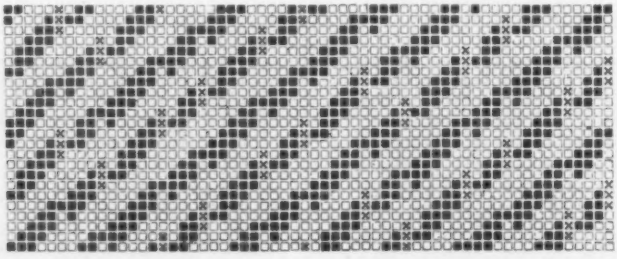


FIG. 1649

comber and lifted the two lap roll shafts. Then I took out the steel feed rolls and steel detaching roll and put them on blocks that I had ready.

I took the pins out of the lifter rods and removed the lifters. I looked at the waste chutes to see if they were in good order and found the sleeve was beginning to break on one of them, so I took it out and had the tinsmith solder the sleeve on again, and then replaced it. From the back of the comber I took all springs and all pins out of the nipper rods. I also took off the caps that hold the doffer and the brushes down. I lifted the doffer shaft and did the same with the brush shaft, I then looked at the brushes and found they were all worn so I took the screws out of the old brushes and put in a new set of brushes on the brush shaft. Then I took a piece of cloth and gave the comber a good cleaning. I looked at the half laps and found four bad ones so I took them out and put in new ones. I looked at the balls and cams to see if they were worn, but they were in good shape. I then began to set the comber up again. I put in the brush shaft and set it so it would rub on the half laps, I tightened up the screws that holds them so they would not slip out, then put the doffer shaft in place and set it so that I could allow a 20 gauge to slide between the brush and the doffer. I put all the caps on that holds the doffer down and screwed them up tight. I put the screws in the brushes, set the brushes even with the half laps and screwed them up. After I had set up the back of the comber I went to the front and put the lifters back into place, wiped the steel detaching roll and the steel feed roll with waste, scraped them with a piece of card clothing and rubbed them with a piece of pumice stone. I then wiped them up with whiting and laid them back in their place. I put the caps on the detaching roll and tightened them up, put the knives in place, put the cushion plates back, tightened just the middle screw on each one of them, and set them all with a 1 3/8-inch gauge. After I had them all set I tightened all the screws that hold the the cushion plate and set the nipper knives to the half laps with an eighteen gauge. I looked at the top combs to see if they were in good order and found two bad ones, took them out and put in two new ones, then set them all to a 20 gauge. put the leather detaching rolls back in place and set them with a 25 gauge.

After that I wiped all the lap plates with whiting and put them back on the comber. I also wiped all the sliver pans and brasses and put them back. I gave the table a good polishing and then took the draw head apart and gave it a thorough cleaning. I then put it together again and gave the comber a good oiling, put the belt on and started it up without the laps on so that the different parts would settle, then let the comber run for about five minutes. Then I put the laps on and started the comber up again with the ends all pieced up, and watched it for a while to see if anything would go wrong. After it had run for about ten minutes and nothing had happened I went off to another part of the room. When I came back I noticed the superintendent and overseer were looking at the comber I had been working on.

The next day the overseer told me that the superintendent wanted to see me in the office. When I went to the office the superintendent told me that I had done a good job on the comber and he hoped I would fix them all that way. He asked me how long it took me and I told him, two days. He said there were 25 combers and in about 60 days we ought to have them all in good shape again. I told him that I would have them all done by that time. On the 56th day I finished the last comber. A few days afterwards when the superintendent came through the room I stopped him and told him that if he did not get better comber tenders his combers would be all run down again in a short time. He asked me what the matter was with the comber tenders and I told him that he had a very poor class of help on the combers and if he did not make a change very soon I could not be held responsible. He said: "What do you want me to do about it?" I said: "Pay a little more money and get better help." He told me that the help he had was suiting him and that settled it. Then I asked him to come

with me and I would show him what the comber tenders were doing.

I walked to one of the combers and stopped it and showed him the half lap and top combs. The needles were all bent and half broken off. When he saw that he didn't say a word, but walked away. That was on Thursday and on the following Monday a man came in the room with the superintendent. They walked around the combers and in the afternoon he came in with his tools. He started on the first comber that I had worked on. I never said a word, but did not go around the combers any more. I had all the railway heads, drawing frames and sliver lap machines scoured and had all the rollers changed, because they were all scratched and cut up. This had caused the rollers to lap up and made uneven work. I had all new clearers put on all the machines that I had scoured. While I scoured the fitter had four combers done, but his work did not show any more than mine. He called the superintendent's attention to it, but did not get any satisfaction from him. Then the man got so discouraged he began to lose interest in his work. He would come in about 8 o'clock in the morning and at 11 o'clock he would quit He had slacked up considerably in his work and after he had been in the room about three months the superintendent got wise to him and told him about it. The fitter got so angry that he packed up his tools and went to the office to draw his money. The superintendent told him that he had better finish his job, so he said he would, but did not want to be bothered. He went back to his work again and it took him four months to do the same work that I had done in 56 days. It seemed to me that the superintendent thought more of him for killing time than he did of me for hurrying up.

While the comber man had been working on the combers I had all the machines scoured and worked hard all the time trying to get the room back in good shape again. One day the superintendent came in the room and saw a set of speeders stopped. He sent for the overseer and told him he did not want to see any of the speeders stopped again. Then the overseer told him that he could not get help. The superintendent told him that when an overseer of a room could not get help enough to run his room it was time for him to get out, which he presently did. The superintendent then sent for me and gave me orders to run the room. I asked him for the job then and he said he would think it over and let me know later. After being on the job for two days the superintendent told me that he had a man coming. He said he was a middle aged man and he thought him to be a practical man at the business. Then I asked him for more pay and he said he would like to pay me more, but as the cotton market was not very steady he could not just then give me more pay. The next Monday the new man came in to work. He was a big fellow and looked like a hustler. He gave me his orders and I saw that they were carried out. He had a rough way about him and tried to scare all his help. After he had been on the job a week five of the best workers got through. The superintendent told him of it and then the overseer told me to manage the help.

About two months later he saw one of the women combing her hair and she had two combers stopped. He came to me and said: "I don't want to have anything like that happen again." He continued talking to me about it. After he got through talking I told him I had reported her to him before and that he said he would let her go, but that she did not seem to go very fast. He got angry at that and began swearing and telling me that he did not want it to happen again. I told him that the best thing he could do was to settle up with me right away. At first he did not want to, so I told him that I would finish the week out, but I would not work another minute for him. When Saturday came he gave me my money and I took my tools home.

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The exportation of raw silk to the United States from Italy for the 1913 season (from July to November) was 3,034 bales, against 4,722 bales in 1912.

DRY-COMBED WORSTED

BY JOHN BROWN

One of the greatest difficulties in getting evenness of color in dyed goods has been due to the oil used in combing. The best results have been obtained when dry-combed tops were used. Our French competitors have specialized in this and have exported a steadily increasing amount of tops so treated. The war has brought the trade of Roubaix to a standstill and the demand for dry-combed tops must be supplied from other sources.

If the plant already in use for ordinary stock is to be used for dry-combed work, there need be very little variation from the regular routine. The stock is taken from card to backwasher to remove the oil used for carding purposes. Slightly more heat will be required in the cylinders or the fibers will be liable to cut when drawn from the circles. After this the stock is twice gilled, punched and then combed. After passing through first and second finishers the tops are ready for drawing. When the square motion comb is used, the stock can be taken direct from the backwasher to the comb, if the sliver is drawn from the inside of the ball. If desired it is passed through one gill, but the balls must then be put in a creel and the sliver drawn from the outside of the ball. The fibers must be put on the circle in the direction opposite to that in which they left the card. Neglect of this detail makes a decided difference to both the tear and quality of the work. One of the objections to the dry method is that there is a slight loss of tear, and more dust than when oil is used.

The French system overcomes the above objections by the so-called dry combing, in the oil put on for carding purposes not being removed until the stock has passed through the comb. If any small loss in either tear or quantity results it is more than made up by the economy in power and labor. The reason why the French produce tops in practically perfect style is that they have the most up-to-date machinery and keep it in the best possible repair.

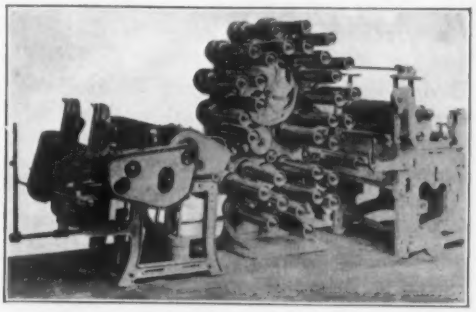

FIG. 1 A MULTIPLE CYLINDER DRYER

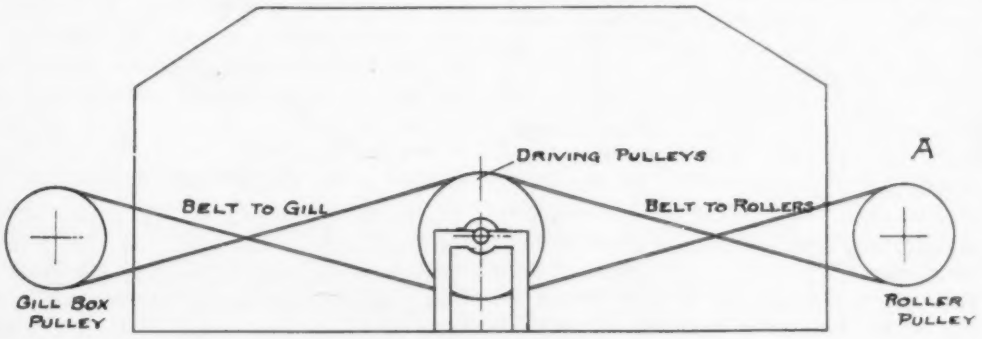

FIG 2. A CYLINDER FRAME

The French cards are clothed with the finest counts adapted for the class of stock without straining the wires. Every roller is covered with filleting, no sheets being used. Grinding and setting are regularly carried out and any faulty roller is at once replaced. The gills are fine pinned and all fallers, circles and leathers kept in good repair.

The slivers from the comb are put through one finisher and then to the backwasher. The first bowl has a moderate allowance of soap, while the second is for a rinsing bath.

The temperature of the first bowl is about 100° F. and second, 90° F.

The multiple cylinder dryer, Fig. 1, is the one generally used in the Roubaix district. If through a sudden rise in the temperature the slivers come off too dry, the difficulty is easily remedied by slipping the slivers from two or more cylinders, thus reducing the drying surface and bringing the stock to the required condition. Where ordinary five or seven cylinder machines are in use skipping one cylinder has the same effect.

In most five and seven cylinder machines, the driving pulleys are geared direct to the squeeze rollers. In order to adapt these machines for this purpose and to prevent breaking of slivers, the best method is to alter the position of the driving pulleys. This is no detriment even if the machine is afterwards used for ordinary backwashing before combing. In the ordinary gearing no slack slivers can be taken up except by turning the box pulley by hand. But by placing pulleys in the center of the closed side of the cylinder frame, Fig. 2, and setting two extra pulleys on the socket, one for rollers and another for gill box, either end of the machine can be run separately by slipping off the belt that is not needed. When changing from seven to six or five cylinders the tension is easily adjusted.

One of the objections frequently made to backwashing after combing is a reduction of the output. All users of imported dry tops will have noted that the finished slivers are two or three times as thick as ordinary finished tops. When the tops are required to make a blend with other qualities for drawing and extra thick slivers are a disadvantage, they can easily be reduced in thickness by passing them through one of the finishers thrown out of use in the combing. If the slivers coming from the backwasher vary above or below the standard weight, a sliver broken down, or one added corrects the defect. Backwashing after combing thus has decided advantages for evenness, regularity of condition and output.

One of the drawbacks of the system is that the noils are not so good a color, and therefore bring a slightly less price than noils from stock which has been backwashed before combing. Owing to the stock being so dry, and thus drawing from the circles more freely, there is some liability of the slivers sagging between the outside and inside rollers if both slivers are run into one, as is the general practice.

If both pairs of rollers are the same diameter they are generally geared as shown at Fig. 3 for ordinary combing. For dry combing six or eight teeth less are required on

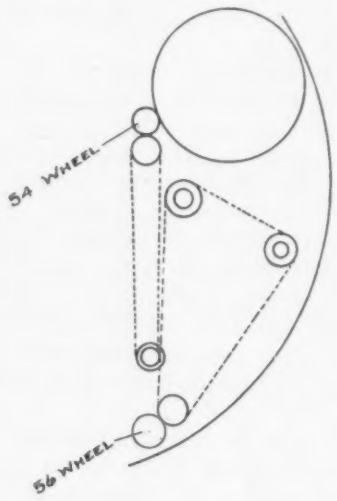

FIG. 3

the inside of the rollers. The speed should be increased on the inside, as this gives a slightly better tear. Changing the gears on the outside would lower the output. It will also be found that considerably less weight is required on the springs of the drawing-off rollers for dry stock. This lengthens the life and decreases the cost of drawing leathers.

The following tables will enable any one to compare at a glance the two systems of dry-combing:

Backwashed before Combing.

Eight processes: Card, backwasher, first gill, second gill, punch box, comb, first finisher, second finisher (slightly heavier output, cleaner noil).

French System.

Card, preparing gill, punch box, comb, first finisher, backwasher.

The French system requires fewer processes and results in a saving in soap, as all loose dirt is taken out before backwashing. There is less weight on the rollers, thus less power is required. The leathers last longer. Both the weight and condition of tops can be regulated more closely.

As in the French system all the short wool in the form of noil is taken out before backwashing. A fairly long draft can be used for the final gilling without much danger of either pushing or breaking the sliver. This increases the output. The pitch of screw in the gill box should not be more than three threads per inch. A pitch of 25 to 30 per inch for the fallers is suitable for fine wools.

As the length of the bed of fallers is immaterial, the making of a new set of screws and fallers is the only expense that need be incurred in changing from ordinary to French dry-combing.

DRESSING

BY PROTOCOL

A dresser should run his warps on as few sections as possible and see that the machinery is in proper position, that is, have the machine in a light and convenient part of the room. Have the machine set up level in all its bearings, especially the reel. In mills that I have visited I have often found the machines in a position where it was necessary to block the reel to prevent it from running down hill at every change of section. The pinholes in the rails were so crooked that the warp sections resembled a rail fence. Do not have the spool creel tossing about like a ship in a gale of wind. There is nothing that will condemn a dresser quicker than this. When a dresser tender asks to have the machine put in proper condition on going to a new position where he finds such a state of affairs as those mentioned above, and tells you that it is impossible for him to do good work with the machine in its present condition, it is not for the boss dresser to say that the last man who worked on the machine had no trouble, did good work, etc. If you are a mechanic you will know that no man can do good work on a machine in poor condition. I happened to get into just such a room some years ago and called the attention of the overseer to the machine. When the attention of the overseer was called to the machine I was told that it had been running that way for the last ten years and that I was the first to complain. I told him I would do as the others had done, but that I would listen to no complaints from the weave room about high or low sections or bad dressing. It is needless to say that the machine was fixed at once.

In nearly every mill the colors are numbered and in making out drafts each color is stated as so many threads of a certain number. This is a good method, as it saves time and space. The spooling should be looked after very closely, for a dresser cannot do good work, where there is poor spooling. Nothing so discourages a dresser as poor spooling, such as holes in the spools and yarn all twisted and tangled up. If it is necessary to make 20, 30, 18, 24 or 36 thread spools see that the guides are set properly. That is, see that one thread does not run over the other. Also see that the end threads are wound all right at each end. Teach the spooler tender to tie a good square knot and break off the ends quite short. Be sure and get the right number of holes on each spool so that the dresser tender will not run short on every warp, for it takes time to tie in spools and it stops production. In short, it is necessary to have a boss dresser with forethought and brains to run a dressing department successfully.

ARTIFICIAL SILK MILLS TO MANUFACTURE EXPLOSIVES

The Berlin Tagblatt reports that the Austrian government has seized the artificial silk mill at Sarwar and is to use it for the manufacture of explosives for the war. This mill was built in 1911 with French and Belgian capital. As is well known, the cotton used for artificial silk can be converted into gun cotton by subjecting it to the action of nitric acid. The "Frankfurter Zeitung" states that a number of artificial silk mills in Belgium have been seized by the German government and are also to be used for the manufacture of explosives.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

BLEACHING WORSTED BRAID

Editor Textile World Record:

Can you supply any information respecting the bleaching of worsted and mohair braids?

Rovira (2360).

The methods pursued are the same as those used in bleaching wool goods in general and the choice depends on the price that can be paid and the perfection of the white desired. Where the best results are wanted it is advisable to begin by selecting wools that scour to a good natural white without bleaching; for the less yellow there is to remove, the less difficulty there will be in obtaining a good white. The cheapest bleach and one that gives a good bottom white is the ordinary sulphur stoving, which may be carried out either on the yarn or on the braid; the material in either case being formed with hanks. The yarn is first scoured free of oil and if need be, is stretched to counteract shrinkage and while still damp from the final rinsing it is hung on poles in a sulphur stove (see "Sulphur Bleach House," pp. 592-5 T. W. R. March, 1914). A quantity of sulphur equivalent to about seven per cent. of the weight of wool is ignited in the stove and the goods are left over night to bleach in the fumes of the sulphur dioxide gas. In the morning the chamber is ventilated and the bleached material is given a good washing.

An alternative is the peroxide bleach, given either with commercial peroxide of hydrogen or with a solution of sodium peroxide. The goods are left over night in a slightly alkaline bath of peroxide and in the morning are soured with weak sulphuric acid and next washed in plain water. In adopting this process the workmen have to be warned against any contamination which might cause a stain on the finished article.

The most perfect result is to be obtained by a combination of the methods named (1) scour, (2) bleach with peroxide, (3) stove with sulphur, (4) scour again. This routine is followed with great success in treating other goods than braid—for example white cashmeres—in certain Yorkshire dye houses.

Strand.

A DEFECT IN WEAVING

Editor Textile World Record:

We are sending you a sample of a worsted filled poplin for examination. This piece came from the loom in perfect condition, but the drawn places developed in finishing. The finisher put the blame on the yarn, which seems plausible from the present condition of the goods, but we cannot understand why the defect did not show up before the piece was finished. It certainly looks to us as if something got on the surface of the goods in certain places causing the yarn to shrink considerably. The yarn would show more twist per inch in the parts that are shrunk.

Weaver (2353).

The foregoing inquiry does not state how the goods were dyed or finished, nor the width of the fabric in the loom, nor its width finished.

The cloth in question is a fairly good quality of dark green poplin, with a weighted organzine warp and a hard twist 2-ply worsted filling. It has 46 picks to the inch. As the warp is of weighted silk, the goods have presumably been made of yarns dyed in the skein.

The wool used is of medium quality, but has been poorly spun, and the threads of the filling show marked irregularities, in the thicker sized threads showing less twist, and the finer ones, more twist, as is generally the case in such instances.

The sample is 4 3/4 inches wide and 4 inches long, cut from the edge of a piece with the selvage showing on one side. In the

middle of this selvage edge the cloth is drawn in 1/4 inch. The curve inward extends for 2 1/2 inches on the selvage. While this central portion is quite smooth and true, the cloth on both sides, as it slopes in, shows puckers, the smooth space between the puckering measuring about 1 1/8 inches. The picks in the cloth are uniform throughout, 46 to the inch, and the fabric appears to be perfectly woven. While the yarn is irregularly spun, it is so throughout the entire sample, and not more so in the drawn-in places than elsewhere. The warp yarn seems to be regular and perfect throughout. Neither of these three agencies, therefore, could have caused the imperfection.

Differences in stretch are often caused by differences in the twist of the filling yarns used, or in the character of the wools of which they are made, some wools shrinking more than others, or by differences in the drag put on the filling by the shuttle tension during the weaving. Differences in twist may be either in the 2-ply state of the yarns or in the single.

In the sample the average twist in several tests made on threads taken from the wider part of the cloth was 39 turns per inch, and on several tests on threads from the narrower part of the cloth it was 36 turns. This difference of three turns would not be sufficient to account for the trouble, and, particularly so, as the threads of the wider part showed the greater twist, whereas if the twist had caused the trouble, it would have been harder twist in the narrower part. So much for the second time twist.

If the drawn in place was due to faulty adjustment of shuttle tension, it should have been apparent in the unfinished cloth, but "Weaver" states that the cloth was perfect before being finished. There now seems to remain but two causes which may have been responsible for this trouble and, in default of information concerning them, it is impossible to speak with precision.

The first question will depend upon how the goods were finished. If these fabrics have been finished on a tentering frame, a method much employed today, an effect like this might be produced if the clamps in places were defective, and did not get a proper grip on the cloth. Therefore, if the cloth were first steamed and then run on the tentering frame with the clamps set to hold it out to the finished width desired, any places which were not securely gripped by the clamps could spring in and produce such an effect as is under consideration.

The second point is the question as to the conditions under which the worsted filling was dyed in the skein. This is a hard-twist yarn and, if dyed in the skein in the ordinary way, would tangle and mat up tremendously. It might therefore be necessary to spread the yarn out on a reel so as to hold the skeins in position, and dye it on the reel. When wet out, it would, of course, contract, slackening up again after drying. Unless this operation were carefully conducted and the skeins spread out very regularly and evenly, and much attention given to seeing that no parts were subject to undue stress, it might well happen that, after dyeing, certain parts of the skein might have distinctly greater power of contraction than other parts, and that, after weaving, these places under the influence of the steam and heat used in the finishing would so contract, and in this way produce such an effect as what we are considering.

If this were the case, it would not be that the yarn in the narrow spot was more contracted for its length than the yarn in the wider place, as would be the case if the contraction was due to difference in twist.

In support of this latter hypothesis, I find that the threads of filling in the wider places are actually longer under the same tension, than threads taken from the narrow place. This difference in length is in exact proportion to the difference in the width of the fabric, the threads in both cases being under precisely similar tension.

As, therefore, the difference cannot be looked for in twist, or, at any rate, in the twist of the 2-ply, and as the other factors which usually enter into such cases must be eliminated as already shown, the question narrows itself down to whether the goods, if finished on a tentering frame, have slipped from the clamps in places, or whether the

trouble arises from the manner in which the filling has been treated in the dyeing.

I am inclined to believe that it is here that the trouble must be looked for. The worsted yarn used in the filling has been very irregularly spun, and it is, therefore, to be expected that, in various parts of the fabric, places where the yarn was thicker than the average or thinner than the average might be expected to occur.

In such a small sample as I have received, and particularly in a sample which does not extend across the piece, no conclusive observations could be made on this subject of size unless the variation was enormous. I presume that the yarn in the drawn-in places may be slightly thicker, for that would coincide with the observations as to the tests which I made, the thicker parts of a yarn taking less twist than the thinner parts, but my experience as a manufacturer (and I have made many such goods) would not lead me to believe that a moderate difference in the thickness of the yarn could effect the width of the goods in the marked manner which is here so apparent.

Furthermore, it will be seen that the springing in of the goods in these places will naturally leave the yarn thicker for a given length.

I think that, instead of a greater thickness of the yarn causing a contraction, it would be more likely to be the other way about in a case like this where the yarn is hard twist. The thinner yarn would receive a greater amount of twist than the thicker yarn, with a consequent increase in the torque, which should be reflected in a greater contraction of the fabric.

This is quite a different proposition from what it would be in the case of a piece of soft wool goods which had to be fulled in the finishing operations, where the fulling effect would be more pronounced on yarn which was more open and lofty.

So far as any taking-up in the weaving is concerned, that is, the variation in the drag on the yarn, owing to its varying thickness, strength or elasticity, this might have been open to consideration except for the statement of the manufacturer that the goods were perfect as they came from the loom, and, if drawing-in to such a serious extent had been caused in this manner, it should, in some degree at any rate, have been observable in the unfinished cloth. Velour.

USING ARTIFICIAL WASTE SILK

Editor Textile World Record:

What is the best way to dispose of waste from artificial silk? Azores (2357).

Apparently a good deal of thread waste is formed in the twisting and spooling rooms of the artificial silk factories and waste accumulators, also on the hands of manufacturing users of the yarn. That the commodity is becoming of some importance is shown by current offers to sell quantities of 30,000 to 40,000 pounds at one time. It fetches in England about 16 cents, or one-twelfth the price of the yarn from which it comes. After being garnetted into a loose condition it is spun, in some cases by worsted spinners, but only to low counts and for sale in two-fold. It does not appear that English waste silk spinners have devoted much attention to the material, possibly because of the complications that might arise from spinning artificial in the same rooms as real silk. The material is spun on the Continent certainly to 14s single, and possibly to higher counts, and it is being delivered to the English fancy trade on tubes and in hanks at a price about 72 cents. It is not known that efforts to comb the waste along with wool and produce an imitation silk and wool mixture yarn for hosiery, have been commercially successful. Some attempts have proved too costly because of the noilage of the artificial silk. Had they been successful at this initial stage it does not follow that the product would have given satisfaction to the wearers. Those who have had black worsted hose plated on the face with an extra thread of white artificial silk are aware that the silk picks up the wool dye in course of laundering and that the washed stockings present a very different appearance from their first brilliant condition. However, the future of waste artificial silk is by no means limited to its direct association with wool. Its advantage for general purposes over mercerized cotton is uncertain but there are special purposes for which it should answer exceptionally well. Berwick.

BLEACHING AND FINISHING RATINE

Editor Textile World Record:

Please inform me how the enclosed samples of ratine cloth are dyed and finished and what kind of machinery is used for the different processes.

Paxton (2321).

At first a preliminary boiling-out operation is given in order to remove the natural impurities of the fiber and also the sizing compounds which may be used as a dressing for the warp in the weaving of the cloth. This boiling-out operation consists in a treatment with solutions of alkalies and is most effectively accomplished by conducting the boiling in a closed kier under a pressure of 7 to 12 pounds. The alkalis generally employed for this purpose are caustic soda, soda ash and silicate of soda. These are employed in varying proportions, it being borne in mind that caustic soda is the strongest alkali and has the most severe action on the cloth, whereas soda ash, otherwise known as sodium carbonate, is less severe in its action on the fiber, but on the other hand it must be used in greater quantity to insure the same detergent qualities. Silicate of soda is quite extensively employed in connection with either caustic soda or soda ash, as it is a fairly strong alkali possessing high detergent properties and its use does not harshen the fiber as much as that of caustic soda or soda ash. Mixtures of these alkalies are frequently made up as proprietary articles sold in trade under the name of bleachers' assistants. Frequently, however, the bleacher himself prepares the desired mixture of alakalis from the simple ingredients themselves.

In boiling out cloth of the character submitted I would suggest the use of a mixture of about equal parts of caustic soda and soda ash using about 3 per cent. of this mixture on the weight of the goods. If the boiling is conducted in a closed kier under pressure it will take from 6 to 10 hours' treatment, depending on the type of kier employed. During the boiling-out operation the liquor should be well circulated through the mass of cloth in such a manner that the whole material receives an equal treatment. This condition is brought about by a proper construction of the kier, the method of circulation depending on the type of kier employed. In some kiers this circulation is brought about by a steam injector, either operating on the inside of the kier through a central vomit pipe or operating on the outside of the kier through several vertical pipes running from the bottom chamber of the kier to the top, the liquor thus being carried over by a jet of steam. Other types of kiers bring about the required circulation of the liquor by means of pumps or by vacuum and pressure. After the material has been boiled out for the proper length of time to insure the removal of the impurities, it then receives a good washing to eliminate the alkaline liquors, and the decomposed substances which have now been rendered soluble by the action of the alkali.

The next operation in the bleaching is to subject the cloth to a treatment with a solution of a suitable hypochlorite. Hypochlorite of lime obtained by the use of a solution of bleaching powder has been a most widely used method for the bleaching of this character of the goods. The bleaching powder solution should be used at a strength of about 1° to 2° Tw., the cloth being run through this solution in rope form whereby it becomes saturated with the liquor. It is then passed through squeeze rolls under moderate pressure and then folded down into bins. In this state the cloth is left for several hours, during which time the hypochlorite liquor saturating the fabric affects the decomposition of the coloring matter in the fiber and at the end of the process the cloth should present a good white appearance. In order to remove the residues of hypochlorite liquors the cloth is next washed. This is usually down in an ordinary form of cloth washer or string tub machine.

In order to insure the complete removal of the lime compounds from the cloth and also to decompose and remove the last portions of the bleaching agent, the fabric is next passed through what is known as a souring operation which consists in a treatment of dilute sulphuric acid standing at about 1° Tw. After this it is necessary to remove all trace of acid liquor from the fiber, as otherwise the material would be-

come tendered on drying. Therefore a very thorough washing is given and sometimes an antichlor treatment is added, which consists in passing the material through a dilute solution of sodium bisulphite. This removes all traces of chlorine and hypochlorite compounds and prevents their subsequent action on the fiber which might lead to tendering of the goods on storing.

The last operation in the bleaching is what is termed a softening and tinting process. The fabric is treated with a solution containing a small quantity of soap or soluble oils and also a minute quantity of some blue or violet coloring matter which will tint the color to the desired tone. Usually it is required to give the dead white acquired in bleaching a slight bluish tone so as to render it more pleasing in appearance. The method of drying this character of fabric such as shown in the samples is very important. Ordinary flat surface cloth can be dried over ordinary drying cans which are economical in their operation and give a large output for a small amount of floor space. In passing over the heated cans, however, the cloth is under considerable tension and goes through what might be termed a sort of ironing operation. This will smooth off the surface of the goods and as it is desired in the goods under consideration to preserve the roughened surface, it will be necessary to dry by other means than the use of drying cans.

Sample No. 3 which was submitted and shows the undesirable finish has been dried on drying cans and consequently the surface is flat and does not have that rough, spongy character which is characteristic of the other samples. This character of cloth should be dried through a machine which carries the cloth along in loose folds or loops. The cloth entering one end of the machine is looped over a set of carrying sticks systematically and these are carried forward through the machine which is heated, and on finally emerging at the other end is not only dried but also has not had its surface disturbed or ironed out. Machines of this character are quite extensively employed for many kind of fabrics where, as in this case, it would be impossible to use the ordinary drying can.

In the dyeing of this kind of cloth the usual methods employed in piece dyeing may be employed, excepting it would not be desirable to use the dye jigger, as in rolling up the cloth under considerable tension this will flatten out the surface so that subsequently the proper finish cannot be easily obtained. It would be better to use in the dyeing an ordinary string tub machine.

J. M. Matthews.

INSTALLING KNITTING MACHINERY

Editor Textile World Record:

My employer has a greater demand for half hose than he can produce on the machines he has in operation. The rib frames, looping and finishing machinery is ample to take care of 60 dozen per day more than is being produced at the present time, but he is not inclined to invest any money in knitting machines. I am willing to install the knitters. How much per dozen would you suggest for the use of the machines? I will pay for the upkeep of the machines. It costs 35 cents per dozen to produce the hose ready for looping and they are sold for 72 1/2 cents per dozen finished. Knitter (2379).

I cannot see how the employer could make it pay to rent machines in this way. It would be better to take "Knitter" into the business and give him stock corresponding to the value of the machines. This would be increasing the business, whereas the rental idea would be adding to the cost of production. If, however, the rental scheme is acceptable to both parties I would figure the charges per day on the following basis:

If one machine produces 3 dozen, 20 will produce 60 dozen.

Cost of 20 machines at $100	$2,000
Depreciation, 5 per cent.	$100
Anticipated profit, 10 per cent.	200
Fair return on investment	$300

Production, 52 weeks, 15,600 doz.
15,600 doz. at 2c. would give a yearly income of $312

If by "upkeep" is meant paying a fixer this cost should be added, but I suppose "Knitter" means depreciation which is covered. Hoosier.

PRODUCTION OF SPINNING SPINDLES

Editor Textile World Record:

Can you give me any information as to the production per spinning spindle per week of 54 hours when making 20s lea and 40s lea linen yarns from good quality stock? Waring (2376).

Twenty cuts or leas of 300 yards per spindle per 9 hour day would be considered a very good production for either 20s or 40s lea linen. The production being limited by both spindle and delivery speeds, no more lengths of 20s could be produced than of 40s, although there would be less turns per inch hoist in it. The production per spindle per week of 54 hours would consequently be

$20 \times 6 = 120$ leas $= 10$ hanks $= 36{,}000$ yds.

H. R. Carter.

It is impossible to give exact particulars of the production which would apply in all spinning flats, even if precisely the same quality of fiber were spun in all. So much depends upon the skill of the workers, the efficiency of the oversight, the condition of the rove, the amount of twist, the speed of the spindles, and the condition of the machinery which naturally affects the percentage of stoppages.

The amount of twist which is imparted to the yarn is the chief factor which influences the production, and the question does not state whether the yarn is for warp or for weft. Some wefts have comparatively little twist, and all wefts are usually slacker twisted than warps. Similarly, for special effects it may be necessary to introduce a large amount of twist into certain kinds of warp yarn. We may just mention that the amount of twist which is introduced into linen yarns is found as follows:

Square root of count $\times$ constant $=$ turns per inch.

The constant varies from 1.5 to about 2.5, so that if we take a good warp yarn with a twist constant of 2, we have

Square root of 20×2 or $4.47 \times 2 = 8.94$ turns per inch for 20s lea yarn.

Square root of 40×2 or $6.33 \times 2 = 12.66$ turns per inch for 40s lea yarn.

Assuming the spindle speed to be 3800 revolutions per minute, we have:

3800 revs. p. m. $\div$ 8.94 turns per inch $=$ number of inches per minute.

Hence

(3800 revs. $\times$ 60 mins. $\times$ 54 hours) $\div$ (8.94 turns $\times$ 36 in. per yd. $\times$ 300 yds. per lea) $=$ 128 leas nearly.

This represents the production without any allowance for shrinkage in length due to twisting; for time lost in doffing and restarting; and for time lost due to breakages and other causes. The percentage allowance for stoppages of all kinds varies in different places, but if we allow 10 per cent., the net production per week of 54 hours would be approximately 115 leas of 20s yarn per spindle.

Similarly, the production for the 40s lea yarn would be:

(3800 $\times$ 60 $\times$ 54) $\div$ (12.66 turns $\times$ 36 $\times$ 300) $=$ 90 leas maximum

which, with 10 per cent. reduction, leaves 81 leas of 40s lea yarn per week of 54 hours from each spindle. W. & K.

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MEASURING GREY COTTON CLOTH

Editor Textile World Record:

What constitutes a yard of grey cotton cloth when sold unfinished to converting houses? Wentworth (2377).

One of the leading firms in the bleaching trade replies to this question as follows:

This question may be answered in various ways, influenced very much by the point of view of the seller and buyer. We can better reply as to what does not, in our opinion, constitute a yard of grey cotton cloth: When it is measured over a measuring roll or on a folding machine under extreme tension; as it does not permit the natural contraction in the warp to occur after leaving the loom. We have goods shipped us on rolls, measured apparently from the loom under tension, which, after unwinding, show as high as 2 or 2 1/2 per cent. contraction. To put the matter in a nut shell, we would say that grey goods, before being measured for delivery, should be allowed to lie in loose form from off the loom to permit the natural contraction to take place in the warp.

HANDLING ABSORBENT COTTON

Editor Textile World Record:

Where can we procure machines for rolling absorbent cotton in paper, also weighing it as it is rolled so that each roll will weigh the net weight specified? Namur (2386).

Our English correspondent replies as follows:

In the only known system of rolling absorbent cotton into packets of a given weight the work is done not by one machine, but by the combination of machines.

(1) The fleece is prepared upon a roller-and-clearer carding engine, at the delivery of which is fitted a fleece-drum usually of 28-inch diameter. The web from the card is wound round this drum until the required thickness is reached. The fleece is then cut and comes away in a sheet some 90 inches in length.

(2) The sheet is laid on the table of the winding machine, which is made in different widths to deliver rolls of any diameter up to six inches and up to 43 inches of width. The rod on which the lap is wound is split and in this opening the paper and lap are inserted. The winding handle of the machine is turned by hand and the lap is pressed under a compression roller which gives an equal pressure throughout the operation.

(3) The long roll thus obtained is transferred to the cutting machine, where it can be cut into sections of any length under a horizontal blade.

The ultimate weight of the packet is thus the product of the length and thickness, both of which are controllable. William Tatham, Ltd., Rochdale, England, is the manufacturer of the three machines described.

William Firth, John Hancock Bldg., Boston, is the American agent.

Wessex.

HUMIDITY IN THE AIR

Editor Textile World Record:

How is the degree of humidity and percentage of vapor in a cubic foot of air figured from the readings of the wet and dry bulbs of the thermometer? Humidity (2375).

The relative humidity of the air is indicated by hygrometrical or psychrometric tables. The observation is first made by either a hygrometer or psychrometer and the tables indicate the humidity corresponding to the temperature shown by the wet and dry bulbs of the instrument. The weight of water per cubic foot is indicated by the relative humidity.

SPINNING MOHAIR YARN

Editor Textile World Record:

I have been making mohair yarn on a 48 inch card, 48 ends, weighing 430 grains, 1/2 run, on the card and 291 grains, 3/4 run, spun yarn. I have had some trouble in the condensing, not being able to rub it enough to prevent it from catching together when the mule comes out. I have lately tried making the roping 215 grains and spinning two ends together, but still have trouble in the condensing. The condenser is running the limit, 350 to 400 turns per minute. We use a Barker condenser and it is in good condition. We also have trouble in keeping the slivers from running slack between the banks, although the largest drive gear is used. We have changed the stroke of the aprons, but cannot use a very long stroke as the stock is so long it catches together and makes trouble. I know there must be some remedy for the difficulty. The batch contains 40 per cent. garnetted mohair, 40 per cent. noils and 20 per cent. mohair. Carder (2364).

I would advise "Carder" sending to the shop where the aprons are made for larger change gears so the aprons can be driven fast enough to prevent the roving from running slack between the banks. If the roving can be condensed so that it will come off the spool I think it can be made to spin all right on a 2-gauge mule. Draw the carriage a little ahead of the rolls when the roving is being delivered so as to keep the ends tight. If there is not too much draft the yarn ought to spin all right. Mohair is very slippery stock to handle and is hard to condense, but if it can be rubbed enough so that it will come off the spools it can be made to spin.

Woolen Spinner.

STAINS ON KNIT GOODS

Editor Textile World Record:

Enclosed find a sample of our bleached knit cloth showing several stains. Our bleaching is done in an open tub and we use equal parts caustic soda and concentrated soda ash. We use a bleaching powder for bleaching. Can you suggest a remedy for this difficulty?

Tabriz (2392).

The stains in the sample of knit goods are air stains. These are caused by leaving the goods too long in the wet state in a heated room or by bleaching in an open tub with

the goods rising above the liquor in the kier. If the latter, the goods will have to be bleached again as the stain produced in this manner is harder to get rid of than an ordinary air stain. "Tabriz" will realize what I mean if he watches the open kier boiling and sees the goods swell up. As the boiling progresses the liquor disappears leaving the goods exposed in places and the scum or dirty water just reaches a certain point, thus producing a stain similar to that on the sample submitted. This is what is called a kier stain. The best method is to weight the kier before starting to boil the goods. First cover the goods with burlap or clean sacking, laying on stones to keep the burlap down. Sometimes heavy iron rods well wrapped up in burlap are used. If the goods are left to lie in the wet state too long in a heated room the goods that hang over the side will dry and that part that contains moisture will be stained as in the sample.

These stains can be removed with boiling water. Procure a garden hose with a fine rose sprinkler and fill with boiling water, sprinkling the stained parts and letting them lie for about twenty minutes and the stains will disappear.

The only way to prevent these air stains is to keep the goods well covered and not let them lie around in the wet state. It is not necessary to make any change in the handling of the goods except as mentioned above. Dulcimer.

THE COTTON BATTING TRADE

Editor Textile World Record:

Can you furnish us with definite information in regard to the requirements of any foreign countries in the matter of cotton batting for commercial purposes, and can you obtain for us or advise us where we may secure samples of what batting is now being used in foreign markets, with prices and information as to how the goods are put up and packed? Saxon (2387).

Definite information about cotton batting in the English market is not easy to get. The article is not distinguished separately in any statistical returns so that the volume of the trade cannot be stated with any certainty. In England the article is not known as batting, but as "wadding," or more generally as "cotton wool." It is used in the dyed state as a wadding by tailors for the shoulders and breasts of coats and more rarely as a quilted interlining for overcoats; for which purposes it is dyed an indifferent black. A pink dyed batting is used by jewelers as a packing for their goods, although white is used more largely. Jewelers buy their cotton wool in sheets from the sundriesmen from whom they get cardboard boxes and shop fittings. A high class of batting with long fiber and little nep is preferred by them, but in some cases two qualities are employed and samples of two sorts which are in use are sent with this reply.

A novelty which may be likened remotely to medicated batting has appeared and is sold in cartons under the name of "Rubrite." This is cotton impregnated with a substance which is certainly highly effective in removing the black deposit from silverware and in polishing the goods. A small sample is sent. Perhaps it might be possible to exploit cotton batting as a cleanser of some other objects. The idea may at least be worth consideration.

Quantities of batting are used in sanitary towels and makers of these buy from the mills. The trade in surgical dressings is in the hands of wholesale druggists and makers of appliances and their selling prices run up to 48 cents per pound. There follows an extract from the catalogue of an English firm selling surgical dressings for refilling ambulance cabinets. The prices, if not up-to-date, are at least informative:

Cotton Wool

Absorbent	lb.	$ .24
Non-absorbent, White		.20
Non-absorbent, Grey		.14
Sal Alembroth		.30
Bardcie		.24
Carbolic		.30
Double Cyanide		.36
Izal		.42

"Red Cross" Tissue (Cotton Wool and Gauze)

Ordinary Quality	lb.	$ .32
Antiseptic		.36

If packed in small packets the following extra charges are made: 8 oz., 4 cents; 4 oz., 6 cents; 2 oz., 6 cents; 1 oz., 8 cents.

In addition there are medicated battings sold under proprietary names, like "Thermogene," an article which has been advertised like a medicine. Wessex.

Knitting Department

THE KNIT GOODS SITUATION

A prominent manufacturer of children's underwear is quoted as saying recently that the past two months have been the worst of any during the past fifteen years. Possibly if his production was men's goods, he could speak differently of the situation. The reason for this is that several makers of men's lines have received orders for export, either for the use of the army or for the general trade in the countries affected and this has had the effect of strengthening the market considerably, more especially on lines of men's fleeced shirts and drawers.

England has forbidden any of her manufacturers of underwear to sell their productions to private concerns and is taking the entire production for her soldiers. As a result of this, there have been some orders placed for wool shirts and drawers for export that have proven to be an excellent thing for some of the Cohoes manufacturers of flat goods, who until recently have been running their mills light.

The call for winter clothing for several millions of European soldiers is more than can be taken care of at home and it is necessary to come to the United States for supplies to help out, but this, of course, is an exceptional business and cannot be counted on to last for any great length of time. The exportation of some classes of underwear may reasonably be expected to increase after the war ceases. For several years there has been a good business done with England on men's fleeced and an increase in the volume of this business is anticipated.

It is reported that the Roxford Co. of Philadelphia have just received an order from the French Government for 100,000 suits of balbriggan shirts and drawers for December delivery, and they are running over time now to make shipment on date specified.

Considerable inquiry and a few orders have come for merchandise for the South American market. This promises ultimately to result in a good business, but at the present time financial conditions in that market are such that our manufacturers are not particularly attracted by the business. The buyers there have been accustomed to long time credits and these conditions must be changed somewhat before the business is mutually satisfactory.

The American jobbers are not giving the underwear manufacturers much encouragement at the present time, as up to date their stocks have not become broken and the weather conditions have been such that it has not been necessary for the retailers to call upon the jobbers for additional supplies. So the whole business has become a matter of waiting for a cold snap which, if it were to come at this time, would be three weeks later than last year.

Most manufacturers are still working on high priced cotton. Nevertheless, several of them have reduced their quotations to encourage business, but we cannot learn of very much being accomplished by the changes. In fact, we hear that many buyers of the larger concerns have expressed themselves as opposed to manufacturers quoting lower prices, until we have had a cold spell which would give them an opportunity to get out from under the heavy stocks they have on hand.

One Southern manufacturer is offering ten pound ribbed shirts at $3.00 and eleven pound at $3.50, and there are two or three New York State manufacturers who have been offering eleven pound at $3.37 1/2 which were sold in January at $3.75.

Women's 25 cent grades of vests and pants have been reduced 20 cents per dozen and some lines of combination suits that were sold early at $3.75 are now quoted as low as $3.50.

Several manufacturers of spring lines have

notified their trade that a revision in prices has been made and are quoting reductions from 2 1/2 per cent. to 7 1/2 per cent.

The Amazon Knitting Co., probably the largest manufacturers of women's straight ribbed vests at below one dollar per dozen have notified their trade of the company's desire to absorb some of the loss forced upon the textile industry by unforeseen circumstances. Although they had covered their requirements for cotton on the basis of 12 cents for Middling, they state they will bill up half of each order at a reduction of 2 1/2 cents to 7 1/2 cents per dozen, which means their trade will own 50 per cent. of their purchases on the basis of cotton at 8 1/2 cents middling.

The Perry Knitting Co. has also notified their customers of reduction in lines of children's ribbed goods of 2 per cent. On their men's balbriggans they have changed their quotation from $1.67 1/2 to $1.60.

In this connection we might state, the Blood Knitting Co. who heretofore have only made ribbed goods, have put men's balbriggans on the market for spring delivery at $1.65, which looks to be exceptional value.

Jobbers' salesmen have now been out soliciting spring orders for two months and so far as we can learn, the orders thus far taken are running very close to the same volume as at this time last year. They report that stocks of light weights in the hands of retailers are very small and that buyers are operating for spring 1915 rather more freely than was looked for. From the orders taken, it is seen that combination suits for men, women and children are growing in popularity every season and salesmen report that nearly every customer called upon is dropping some lines of two piece goods and making up their assortments for spring.

Considerable activity is noticed in the demand for children's suits made with waist attachment. These are being shown in carded yarns at $1.75 to $1.90, combed yarns at $3.50 and in lisle threads at $6.00 to $7.00. The trade ask for these all to be made with pin tube, especially in the two better grades.

Women's combination suits are being taken almost entirely in plain stitch fabric and without the seams at the sides. It is noticed that the tight knee suits are being sold in just about the same volume as the lace trimmed.

Sales of men's combination suits in ribbed, mesh and woven fabric continue to increase at the expense of the shirt and drawer business. The retailer is discontinuing almost entirely the lines of colored shirts and drawers in light weights, and except in a few lines of 25 cent grades which are being taken in oxford, gun metal and black, the business has developed to one of balbriggans and bleaches.

One of the new men's combinations on the market this season is that made by the Stevenson Underwear Mills. This garment is constructed principally of nainsook, soisette or some woven cloth, but the back of the garment from the shoulder to the waist line is made of a knit fabric. The seat flap is also made of the same knit cloth and has a single gusset closed crotch.

The Altys Knitting Co. are advertising extensively their nainsook suit which is made with a cord sewed into the outside leg seams, running up about eight inches from the hem and to this corded seam is attached a vertical garter. It is claimed that it does away with the necessity of wearing the elastic around the leg.

The Beverly Underwear Co. are advertising a new combination suit for women made by sewing the two leg parts to one body part giving extra width around the hips. It is so constructed as to make a perfect closed crotch for which they have adopted the trade name of Hermit closed crotch. This also has the narrow back and full bust feature to commend it. It is made in both medium and heavy weights and retails at one dollar a garment.

SWEATERS

Reports that the Russian Government are in the market for one million sweater coats and that England has already placed an order for half that number for the use of their soldiers ought to be of lively interest to the manufacturers of this country. We have been told that these are being taken in a brown shade and that the price is somewhere

between $18.00 and $24.00 per dozen. Aside from this demand for the armies, the sweater manufacturers of this country may reasonably expect to supply a proportion of the population of the warring countries. With their industries shut down or badly crippled, it will be necessary for them to look to us for this production which they cannot now supply. If the estimate made by Lord Kitchener of the war lasting three years proves correct, this country may be called upon to supply vast quantities of sweaters for some time to come.

A scattering duplicate business has come to manufacturer's hands for the American jobbers during the past month. There are those who point to the large number of unemployed people as an indication of increased sweater business, the argument being that they will buy sweaters, instead of overcoats when the cold weather comes. There is also another demand to take notice of. Many who are charitably inclined are buying sweaters quite freely and sending them through various organizations to France and Belgium for the use of the needy women and children.

As to the business in our own retail stores throughout the country, the rope or Jumbo stitch coats continue to be the popular garment for men. Maroon is the principal color asked for and from $3.00 to $5.00 is the popular range of prices. To be sure there are some $5.00 and $7.00 coats being sold and we are informed that this end of the business is very much smaller than for the past three seasons.

The Lion Mills of Cleveland are showing a line of shaker knit coats made with convertible collar which when open has a regular coat lapel effect with buttonhole and when closed buttons up tightly around the neck like the Byron collar.

Another new garment being shown is one made of ribbed fabric between the weight of a Jersey and an ordinary sweater coat. These are slightly brushed, made V neck, without pockets in oxford, crimson, navy, copenhagen, tango and Kelly green. They are of a very elastic fabric and suitable either for men or women and retail at $3.50. It is claimed for them that they possess the warmth and convenience without the clumsy appearance and weight of an ordinary sweater coat.

Knit coats for women are today of a greatly diversified character and one can see worn all kinds of fabrics from heavy shaker knit wool to the fine light weight silks in all colors and designs. In the lighter weight fabrics, high colors have the call and a good business is being done on light weight wool coats made with V neck in such shades as Paddy green, Saxe blue, old rose, purple, azure and watermelon pink.

Real and artificial silk coats have been in very good demand during the past three months, but the demand is changing somewhat to wool garments. Sweater manufacturers are looking forward to a good spring business on silks and fibers and will soon have their lines out for spring.

Among the newer creations for fall and winter wear are coats, or more properly speaking, vests made with long capes. These are being shown mostly in combinations, the vests and cape collar being of one color with the cape of another. The best selling combinations are black and white, navy with white, black with green, navy with navy and white stripe.

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MACHINES FOR MAKING GAS MANTLES

Editor Textile World Record:

I would like information regarding the size of machines, gauge and number of needles used for making gas mantles. Mayfair (2380).

One of the leading manufacturers of gas mantles in this country replies as follows:

There are as many different styles of machines for making mantles as there are factories. For the past fifteen years we have used the Tuttle machine No. 3, in which the cylinder is three inches in diameter. The number of needles varies from 70 to 110 according to the grade of the mantle. The gauge of the Tuttle machine which we use is 30 XX needles. Granite.

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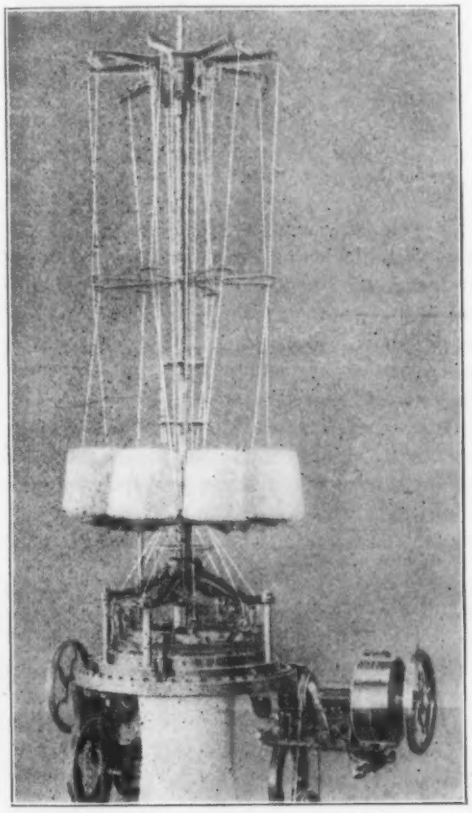
The total imports into the United States of alizarine and coal tar colors have been about ten million dollars annually.

THE CRAWFORD KNITTING MACHINE STOP MOTION

The illustration shows a knitting machine equipped with the stop motion manufactured by the Crawford Manufacturing Co., New Brunswick, N. J. Much depends upon the stop motion of a knitting machine in maintaining a high quality of product. Without a reliable stop motion the number of seconds are greatly increased and the goods that are passed as firsts often show many imperfec-



A KNITTING MACHINE EQUIPPED WITH A CRAWFORD STOP MOTION

tions which cause a serious loss to the mill. The Crawford stop motion has been designed to give knitting manufacturers a device that could be relied upon at all times and under all manufacturing conditions to stop the machine on the breaking of a thread. This motion has been in use over twenty years, during which time nearly 22,000 have been installed in different mills in the United States and abroad.

It is adapted to all kinds and makes of circular rib latch needle machines, body, sleevers, single feed and splicers. Recent improvements enable the use of the stop motion on machines using sweater yarns, and it has been found to work as satisfactorily on such heavy materials as on underwear work.

The Crawford Mfg. Co. make a specialty of the manufacture of stop motions and claim that their products are unexcelled. They guarantee the motions to meet the claim made for them that they will stop the machine when bunches appear in the yarn, when the yarn catches on the bobbin or for loose ends and piece-ups. We give a few of the many testimonials received from manufacturers who have used the Crawford stop motion:

We are glad to state that we have a complete equipment of the Crawford stop motions on all of our knitting machines where they can be attached. We have found them very satisfactory indeed in every particular. The device prevents press-offs, breakage of needles due to slubs and drags, and consequent resulting seconds and waste. The stop motion makes possible working the yarn directly from the package as received from the yarn mills and saves winding machinery and back winding expense. All sizes and grades of yarn work equally well with the attachment properly equipped.

. . .

We have over one hundred machines equipped with your stop motions and we are very much pleased with same. They need very little attention or repairs; in fact, the stop motions that we put on our machines ten or fifteen years ago are performing their work just as good as the stop motions we put on recently.

. . .

We wish to state that we have been using your stop motion on our knitting machines for the past fourteen years. They are indispensable as a means for preventing the various "knitter troubles", which they do, at least seventy-five per cent. of the time. We have applied them to every machine in our plant since the first experiment with the stop motion, and we would not buy a knitting machine without your stop motion on it. We are now using about one hundred of them.

. . .

The information you wish us to give you in regard to your stop motion, is given with pleasure. We have over two hundred of your stop motions in our plant and they have paid for themselves twice over. Every knitter can run a third more machines and also make from four to six per cent. less seconds, also the same per centage in needle

breakage. It would cost us about twenty-five per cent. more for our knitting if we did not use your stop motnons, and it would be almost impossible for us to get knitters.

. . .

We are using a considerable number of your stop motions on our circular machines, particularly in our sweater mill, and find them entirely satisfactory.

JERSEY SWEATERS

BY CARDIGAN

The jersey sweater which is probably the most popular of fall knit garments is made in many colors and styles. As they are worn extensively by athletic teams, they are made in many different combinations of colors. The following colors which have proved staple are usually carried in stock, oxford grey, navy blue, crimson, maroon, black and cardinal.

Of the striped garments the chest stripe, shown at Fig. 1, has proved the most popular. These garments are usually made up

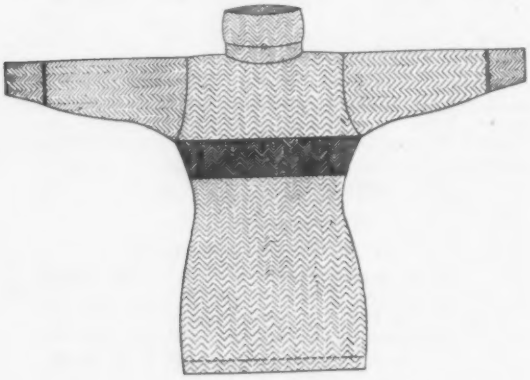


FIG. 1

just as they are ordered, but a few manufacturers carry the stripes in standard colors in stock. In knitting jerseys latch needle machines are used extensively, but a few mills are using spring needle machines. The cloth for the jersey shown at Fig. 1 is knit in lengths as follows:

.8 ozs. 16s cotton yarn.
5.1 ozs. 1⅞ runs cotton yarn.
2.6 ozs. 1⅝ runs cotton yarn.
8. ozs. 1⅕ runs cotton and wool mixed.

16.5

One length will make two garments and it is not necessary to seam them across the shoulders. The sleeves are made of plain cloth. The collars and cuffs are made on a circular machine. This garment is made with a single or double roll collar, with a military collar or with a V-neck.

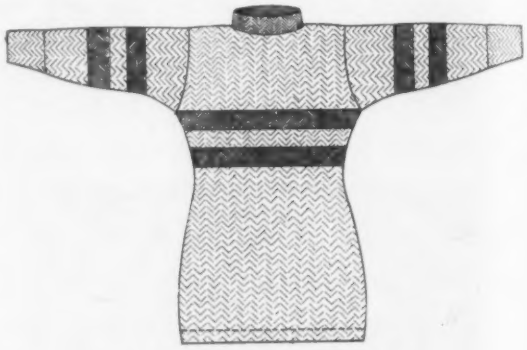


FIG. 2

Fig. 1 shows the roll collar; Fig. 2, the military collar; and Fig. 5 the V-neck. The double collar is made on a circular machine and is made so that when it is doubled and sewed on it will finish 7 inches. The cuffs are made so as to finish 4 inches when doubled and sewed on.

In making the single collar the only difference is in the fact that the collars and cuffs are made single and are finished with

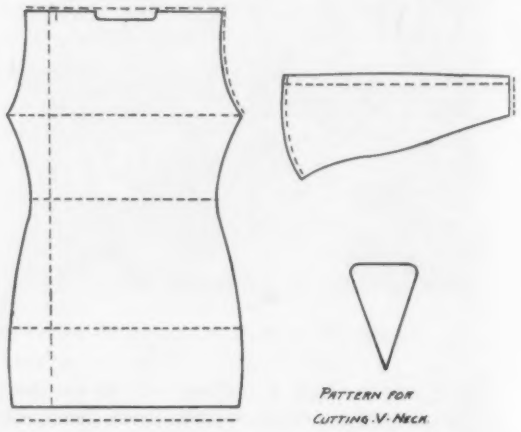


FIG. 3

a selvage edge and are made slightly firmer than the double. These collars are about 9 inches long.

In making double collars and cuffs for worsted jerseys, 2/26s worsted yarn should

be used; for coton jerseys, 2/16s cotton yarn; and for single collars and cuffs 2/18s worsted should be used. The military collar is made double and finished 1 inch when sewed on. It has proved very popular with football teams.

Patterns used for all style jerseys are shown at Fig. 3. Fig. 2 shows a jersey with chest stripes and arm bands, two 2-inch

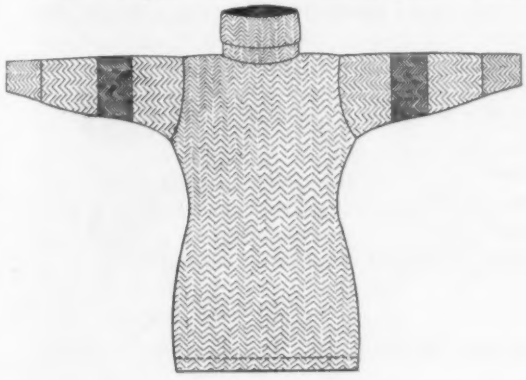


FIG. 4

stripes two inches apart. This garment is very seldom made except on special orders. The lengths for the body are knit the same as the lengths described at Fig. 1, with the exception that the chest stripes are made two 2-inch stripes two inches apart.

The lengths for the sleeves are knit as follows:

FIG. 5

17 inches plain
6 inches stripe
20 inches plain
6 inches stripe
17 inches plain

This garment is made in all styles.

Fig. 4 shows a jersey with a plain body and bands on the arms. The sleeves are knit in lengths as follows:

7 inches plain
2 inches stripe
2 inches plain
2 inches stripe
7 inches plain

This garment is also made in all styles. The jersey with a sleeve stripe is very popular and attractive. This is shown at Fig. 6. The

FIG. 6

stripes are alternating ones and are made automatically, thus insuring each of the same size. They are made in one and two-inch stripes.

The garment shown at Fig. 7 is made with alternate stripes 2 by 1/2 inches wide, and also 2 inch alternate, and is made in all styles.

FIG. 7

The cloth for jersey sweaters is usually made of the following sizes of yarn: 2/31s worsted, 2/26s worsted, 2/18s worsted, 2/16s worsted, 2/13s worsted, 10s and 2/12s cot-

ton. It is usually knit on the following cuts of machines: 2/31s worsted is knit on an 11 cut machine, 24 inches to the inch; 2/26s worsted, on an 11 cut machine, 22 stitches to the inch; 2/18s worsted, on a 10 cut machine, 16 stitches to the inch; 2/16s worsted, on a 10 cut machine, 16 stitches to the inch; 2/13s worsted, knit on an 8 cut machine, 16 stitches to the inch; the 10s cotton, on an 11 cut machine drawing 22 stitches to the inch; while the 2/12s cotton is knit on an 8 cut machine drawing 17 stitches to the inch. The collars and cuffs are usually made on an 8 cut machine.

Worsted jerseys are invariably seamed and overseamed, while cotton jerseys are made on an overlock machine. The collars and cuffs on both cotton and worsted are seamed and overseamed. In making jerseys the first operation is the sewing in of the sleeves, then sewing them under the arms and down the sides, sewing on the collars and cuffs and then hemming. The garment is then pressed, usually on an underwear press. As a general rule the worsted jerseys are packed four in a box; the cotton jerseys, six in a box.

LENGTH CONTROLLING DEVICE FOR FULL FASHIONED MACHINES

A device has been recently patented for an improvement in full fashioned knitting machines which overcomes the difficulty with uneven lengths. Not only in the general length of the stockings, but in the divided lengths as the welt, or, if an ingrain stocking is being made, there will probably be a stripe or tipping in the welt which must be in its proper place. The narrowing at the calf of the leg must begin at the right point, after which comes the splicing and then the length of the heel itself. All these lengths are at present regulated by hand or by guess work, resulting in a large number of mistakes. A manufacturer may give say sixteen inches of silk for a certain price per dozen and then find that the hose is being made with 15, 16, 17 and sometimes 18 inches of silk, all of which shows the real necessity for this improvement.

The invention consists of the arm, shown in Fig. 1, which at its upper end is in contact with the belt shifting rod. By being in between two collars, the belt shifting rod may be pulled on or off at will by hand in-

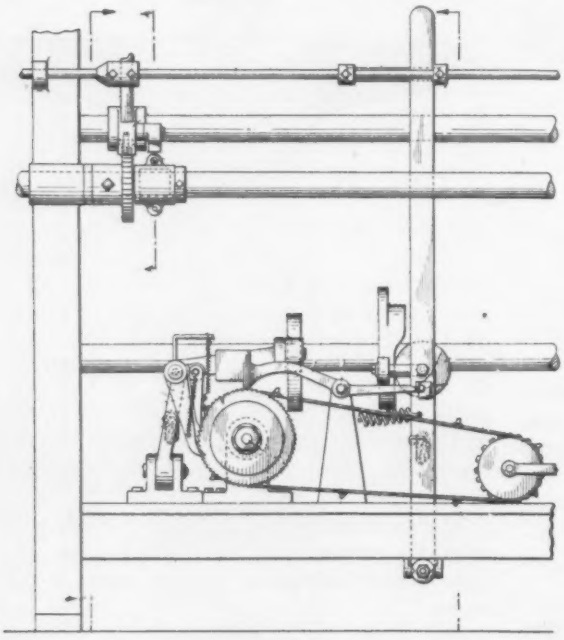


FIG. 1

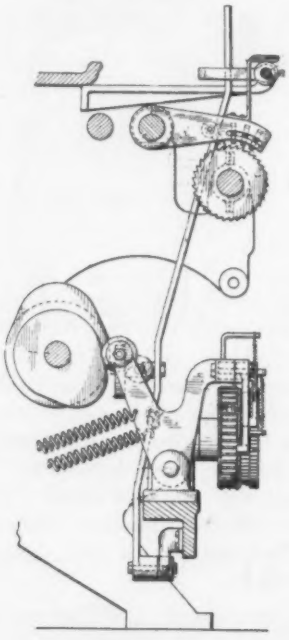


FIG. 2

dependent of this automatically moving arm. At its lower extremity it is connected by a universal joint which allows the arm, when released from the catch, to fall forward, thus bringing the roller in contact with the side of the cam, the movement of which forces the arm over, thus moving the belt shifting rod and stopping the machine.

The arm, with its catch, is at this time hanging loose and as the momentum of the machine carries it after the belt has been shifted, the cam comes in contact with the roller, forcing the arm out of its original position which releases the roller, and the spring immediately pulls the arm back and into contact with the trip catch.

To stop the machine in the desired places stop studs are fastened to the chain, the movement of which brings the studs into contact with and raises the arm.

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FANCY KNIT GOODS FOR LADIES' GOODS

BY TRENTON

I recently blundered into the back room of a certain Philadelphia knitting mill. Much disgust and many scowls greeted my entrance. Pieces of knit fabrics were quickly pushed out of sight and one operative stood in front of a knitting frame that had some fancy stitches on it. I got a good look at about all they had and asked the reason for the operatives' behavior. To make a long story short I was informed that I had butted into their experiment room and that they were trying new stitches on ladies' light weight goods. They told me they had something new and I hardly had the heart to tell them the truth. As a matter of fact, I had made the same goods twenty years before and was able even now to improve on their work. This information was not well received. It seems that fancy goods are coming back and they were trying to get the first chance at the business. For the benefit of any who might be interested in this class of goods, the following will be a help.

The Richelieu rib is the most popular in the straight goods. This is a 2 and 2 stitch, meaning every third out of both dial and cylinder, with the exception of about four inches front and back. These four inches were divided into four equal sections with all dial needles out except at the ends of sections where two dial needles were left in to hold the stitch down, as shown at Fig. 1. This being practically a 2 and 2 stitch the cylinder cams must draw a long stitch to make up for the needles that are left out. In other words, enough yarn must be fed into the needles to allow the short stitches plenty of room to push up and not take the stitches with the needles, where the dial needles are out. This garment is generally made on a 12 cut frame with a 24s or 26s yarn. This can be arranged for different weights.

The bird's eye stitch is made either plain or shaped. Long latch needles are used on the

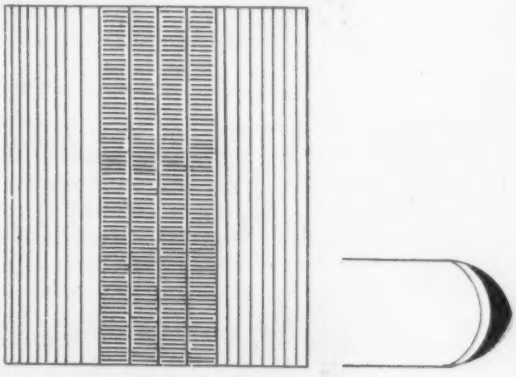


FIG. 1 FIG. 2

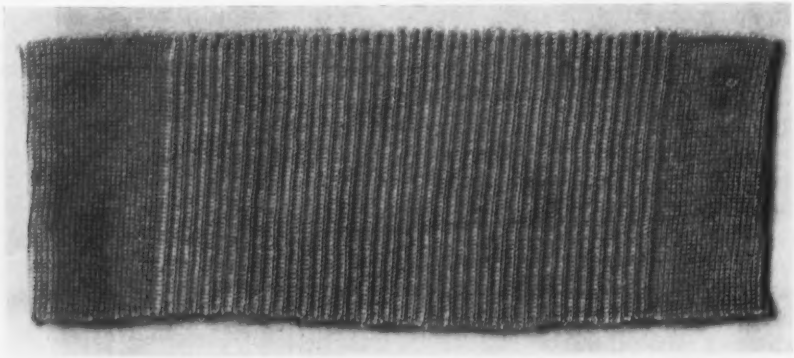
plain garments, to cast off only at certain cams. The shaped garment has regular needles on a tuck stitch, the bird's eye stitch depending on how many cams would tuck and cast off on the dial needles. The long latch needles were generally used for about every third or fourth dial needle. These needles would hold the stitches for three cams; in other words, hold three stitches before casting off on, then hold three again. This had an attractive effect with white and pale blue or white and pink. The white yarn would go on the cast off stitches and a colored yarn between the three tucks.

In connection with long latches care must be taken to get the latches long enough to clear with only a slight grinding of the cams. All the cams that hold stitches on long

latches should be ground until the stitch is held on the long latch, still allowing the regular needles to clear as usual. The shaded portion in Fig. 2 shows the part to be ground off. Care should be taken not to grind off too much.

to hold the stitches on the plated work. This was done on the old style plain machines where no arrangement was made for a tuck stitch.

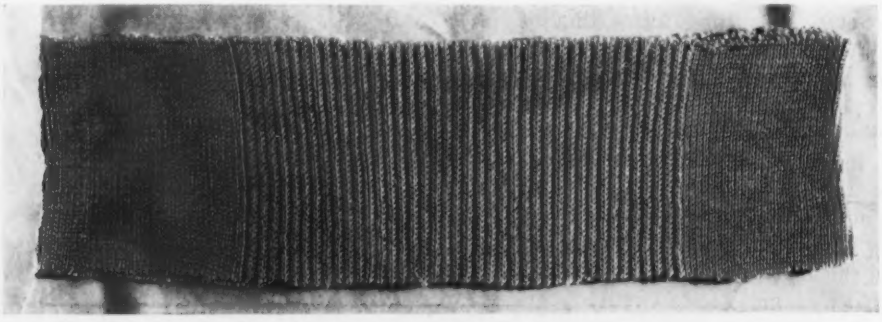
The cams of the dial need not be ground much for this class of work. The latch on



A RICHELIEU RIB

About the best seller in these long latch patterns was a 2 and 2 inch cylinder and 3 and 1 inch dial. This was the same as a 2 and 2 with a long latch between the two cylinder needles. This long latch held two

the dial needle could be made long enough to hold by grinding off about 1/16 inch, and the regular needle could still be used on other grades if needed. In plating on this a slight tension is used on the inside



A TUCK STITCH

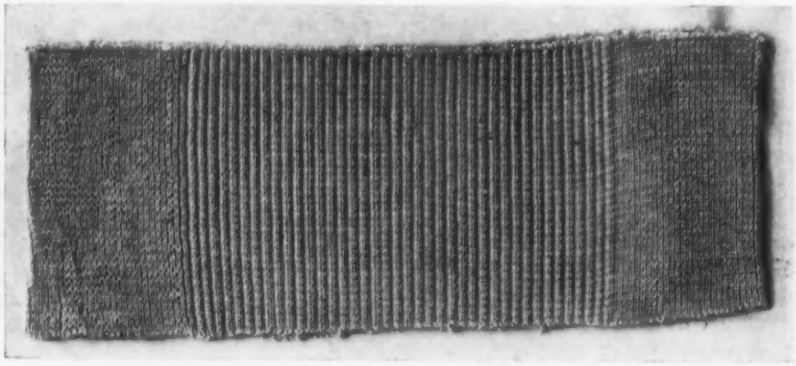
and cast off two. These goods are nearly always made on a 12 cut frame with 28s yarn.

Some mills plated these patterns, using a cheap yarn over a good combed yarn or one color over another, which gave a very attractive effect. Others did not use a tuck cam, but would let out the dial stitch cam enough

thread to hold it from jumping when the ends break out.

Another popular style was the chain stitch garment. This was quite distinctive from the other styles. The stripes of color could be run either way as the color was thrown either inside or outside according to how the chain was made up. In this style each

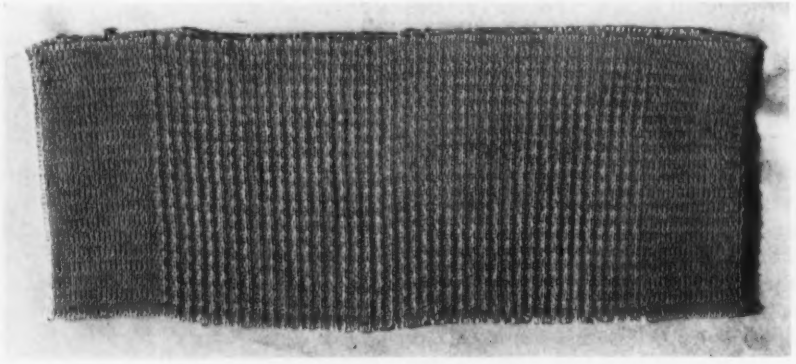
set of cams was run from a separate chain. One set reversed instantly from plain to tuck, while the other set also reverses. By using long latch needles and both chains a checker-board effect is obtained. Without the long latch needles a stripe could be made



A FANCY KNIT FABRIC

on shaped goods. Naturally both colors showed in the waist plain stitch. The chains are made up of one high and one low link each, but one chain must be set to work opposite the other, so when one is on high the other is on low. This is also made in plain white, but a ridgy feeling is the only drawback, unless a finer yarn is used on the tuck stitch in the center of the long latch, providing three needles are together, according to the pattern required.

A popular style is the chain stitch, shown at Fig. 4. The stripes of color can be run either way as the color is thrown either inside or outside, according to the way in which the chain is made up. In this style each set of cams run from a separate chain. One set can be made to reverse instantly from plain to tuck, while the other set would also reverse. By using long latch needles and both chains a checker-board effect could be obtained without the long latch. A stripe can be made on shaped goods and both colors show in the waist line in a plain stitch. The chains are made up of one high and one low link each, but one chain must be set to work opposite to the other so that when one is high the opposite is low. This pattern is also made in plain white, but a ridgy feeling is the only drawback unless a finer yarn is used on the tuck stitch in the center of long latch, with three needles together.



A CHAIN STITCH

Dyeing, Bleaching, Finishing, Etc.

NATURAL DYES AS SUBSTITUTES FOR COAL TAR COLORS

BY CHROMIUM

Fifty-eight years ago the first aniline dye mauve was discovered, and since then the introduction of new dyes has progressed by such tremendous strides that modern dyers are completely at sea now that war has cut off the supplies. There are makers in France and Switzerland, but their output is so disorganized that it is of little use, while the few British makers cannot possibly cope with the demand. As synthetic indigo is only made by two German companies, this will be one of the first dyes to suffer shortage, and it will lead dyers to use the natural product which for some years has been neglected. Why synthetic indigo has taken hold so wonderfully quick is: First, the incessant advertising the dye got from the makers; secondly the highly convenient form was sold in, the strength being always a fixed standard and the paste easily soluble; thirdly, the improvements in hydrosulphite which reduced the dyeing to a comparatively simple process, while the use of ammonia in the vat in place of lime got rid of a lot of troublesome sediment. The planters of natural indigo appeared to take the fight lying down, and made no efforts to bring their dye to the easily applicable state of the synthetic, nor did they try to compete in price. Chief among the drawbacks to natural indigo is its variability in quality, but this could be got over by the makers standardizing it before it left their works. Another, and a more grave fault to the user is the fact that it requires grinding before it can be used. There is no doubt that bad grinding is responsible for a terrible leakage in the cost of dyeing Before being used, indigo should be ground to an inpalpable paste, so fine that none of the particles can be felt between finger and thumb. The reason why this is necessary is very simple. Indigo is not a substance which merely requires acting upon by a solvent to bring it in solution, but each particle must have its surface reduced to indigo white before the alkali will dissolve it, and only a very thin superficial film is acted upon at once. This means that each particle according to its size, must alternately have its surface reduced then dissolved by alkali and again reduced, the process being prolonged exactly in proportion to the fineness of the particles. Growers of indigo should export the dye in the paste form, which would also be a saving to them in evaporating and drying to a cake, while the strength of indigo and water content should also be given on each cask.

SYNTHETIC VS. NATURAL INDIGO

Full dark shades can be dyed for a less cost with natural indigo than with synthetic, according to Alex. W. Playne of Stroud, England, who published an open challenge to this effect, which I have never known to be accepted. Fermentation vats are still used for thick cloths difficult of penetration, but indigo dyers will never again go back to these except in special cases, and what is wanted is some enterprising firm of manufacturing chemists to put natural indigo on the market in a similar way to synthetic, wholly or partially reduced if required. Playne's patent indigo vat is based on grinding up the indigo along with glycerine, which while having no chemical action upon the dye would assist very materially in isolating the ground particles, so that these would be readily acted upon by the reducing agent.

SODIUM HYDROSULPHITE

This is the important factor in indigo dyeing, and the modern form of it, a clean, dry, easily soluble, white powder leaves nothing to be desired. It is of course up to any dyer to make his own hydrosulphite, but it isn't to be expected that he can produce it as a clean white salt. Theoretically, to form sodium hydrosulphite $N_2S_2O_4$, the amount

of zinc dust to 100 gallons of bisulphite of soda of 76° Tw. is 62 lbs., but in practice much more is required. One recipe is 100 gals. of bisulphite of soda at 76° Tw., 150 lbs. zinc dust, and 7 1/2 gals. of caustic soda of 76 Tw. There are hundreds of different recipes. The liquor must be kept cool during the working, and also prevented from oxidizing by being covered from the air, and only the clear top liquor used. Of course when the vat is used the liquor must be just on the balance, slightly alkaline if anything, and only just sufficient hydrosulphite present to keep the indigo reduced, more than this simply strips it off the fabric as fast as it is deposited.

EXTRACTS OF INDIGO

Now that aniline blues are scarce we may have to revert the so-called extracts of indigo, which were largely used for blues at one time. All these extracts were made by dissolving powdered indigo in concentrated sulphuric acid, a process which produced a soluble salt of indigo which had lost all the fast properties of vat indigo, and could be applied in a boiling bath. Sour indigo extract or Saxony blue was prepared by dissolving one part of finely ground indigo in six parts of strong sulphuric acid. After standing and diluting with water the dye was thrown to the top as a pasty mass by adding common salt. After repeated washing with clean water and salt the surplus acid was washed out together with the green and brown impurities always present in commercial indigo, and the paste was then filtered on a cloth. Neutral or sweet extract of indigo was made by neutralizing the sour extract with carbonate of soda and throwing out the dye with common salt. Indigo carmine is the best refined extract, neutralized, dried and powdered. It should dissolve in water without any residue, and be entirely free from greenish tones. None of these are of any use for cotton dyeing, but were at one time largely used for wool and silk, the sweet extract being still used to some extent for silk, as it produces shades brighter than vat indigo, which also dye up remarkably level. They are dyed from acid baths containing also a little Glauber salt to prevent the color going on too fast, and have also a limited use in printing woolen and worsted yarns for tapestry and carpets. Soap and weak alkalies quickly strip the color, which is also fugitive to light.

Below is an example of a dark blue upon 110 lbs. of cloth, dyed with logwood and extract. Mordant for one hour at the boil with 5 1/2 lbs. alum, 2 1/2 lbs. red ergol, 5 lbs. bichromite of potash, and 2 1/2 lbs. tin crystals. Dye at the boil with 22 lbs. of logwood and 11 lbs. of extract.

PRUSSIATE OR ROYAL BLUE

This is a rich deep blue formerly much used for cottons, linens and jute, but rarely for wool owing to the difficulty of applying it to that fiber. Silk for black is at times given a bottom with it to correct the rusty tones of iron blacks. The dyeing of prussiate blue on cotton is simplicity itself. Alternate baths of yellow prussiate of potash with one of iron liquor, deposits a very rich deep blue rather inclined to a greenish tone. For salts of linen the following ingredients are given. Bath No. 1 is made of 3 lbs. nitrate of iron and 2 lbs. tin crystals, in which the goods are entered and given five turns. Squeezing follows, and the goods are passed into a second bath made up of 2 lbs. yellow prussiate, and 1 lb. oil of vitriol, when, if not dark enough, the alternation is repeated. That it is possible to dye woolens with prussiate is proved by the following old recipe, which is rather a roundabout method of proceeding.

For 100 lbs. wool dissolve in separate vessels and in cold water: 9 lbs. red prussiate, 2 1/2 lbs. tartaric acid, 2 1/2 lbs. oxalic acid, and 2 lbs. tin composition. When all are dissolved they are mixed, stirred well, and 12 lbs. sulphuric acid added. The goods are entered cold, raised slowly to the boil and boiled for half an hour. If a darker shade is desired this can be got by adding 14 lbs. logwood and 2 lbs. tin crystals. To dye 40 lbs. of silk, a 60-gallon bath is made up with 9 lbs. nitrate of iron at 120° Tw., and 1 lb. 10 ounces tin crystals. Give 9 turns, then wash and give another 9 in a warm bath

containing 2 lbs. yellow prussiate and 1 lb. oil of vitriol. These baths are repeated alternately until the shade is full enough. Prussiate blues are turned a rusty brown by alkalies, but are unchanged by weak acids while they resist light fairly well and give a range of blues from sky to nearly black.

LOGWOOD

This is still a live dye in spite of the fierce competition of artificial dyes. The makers of extracts will be reaping a fine harvest, as it is used for all classes of fibers and for compound shades in addition to blacks. It sets the standard for tone of black, which has not been equalled, a reason why it is still used for cashmeres, alpacas, etc. It covers up burrs, feeds the material, and levels up easily, while a lot must be put on before the tone appears rusty. Logwood stands potting, which many of the artificial blacks will not, and it is fast enough to light in dark shades if only care is exercised. A good clean black can be dyed on slubbing by mordanting in the machine with 2 per cent bichromate of soda in 10 to 15 gallons of water, adding after a quarter of an hour's boiling, 3/4 per cent of sulphuric acid well diluted; then in another 15 minutes, 3 1/2 per cent lactic acid, with another 1/4 per cent of sulphuric towards the end of the boil. By these means the bath exhausts, and 5 per cent hematin crystals with 2 per cent of fustic abstract will give a clean solid black.

Very deep blacks require an after-chroming with 1 per cent of bichromate. This will give a fresher and faster shade by increasing the percentage of fustic. After-treatment with 1 per cent copper sulphate increases the fastness to light, and makes no difference whatever to the shade, consequently this is frequently used for dress goods, and the after-chroming for heavier cloths. One dip blacks can be dyed both on cotton and wool, but on wool the color is never so clean and fresh as by the two bath process.

It is estimated that the spinning spindles of the world now reach the vast total of 104,000,000; there are also about 5,000,000 doubling spindles.

PREPARING HYDROSULPHITE OF SODA

BY BETA-NAPTHOL

Not only has the European war curtailed the dyestuff supply, which, however, the domestic manufacturers and importers are heroically endeavoring to overcome, but there is at the same time a shortage of a number of the items used in conjunction with dyes, that are also curtailed or at most, so scarce as to be regarded as precious.

One of the most important of dyers' chemicals is hydrosulphite of soda, which is of vital necessity as a reducing agent in dyeing with vat colors, without which dyeing cannot proceed. It was manufactured on a fairly large scale in dyehouses where indigo dyeing was carried out, and used by the dyer as made. Naturally successive batches were not exactly alike, but in the general run of things, the slightly varying strength was made up either by using more or less of it as the reduction of indigo proceeded slowly or rapidly.

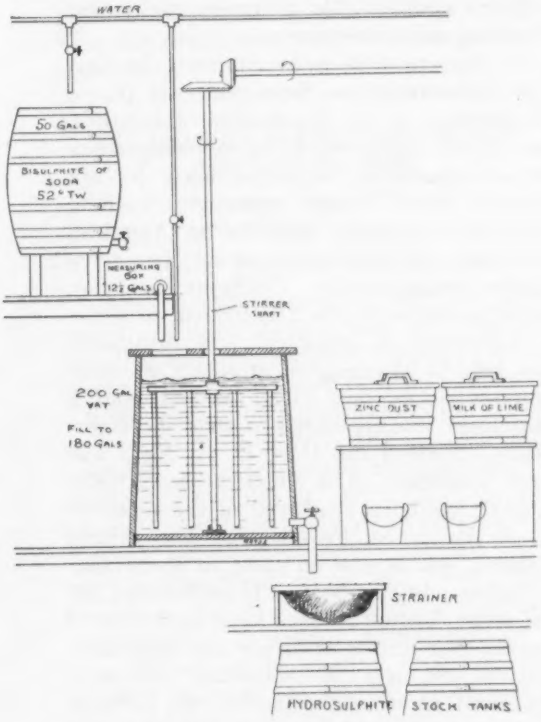
After the extensive use of synthetic indigo and the so-called vat colors, increased attention was given to the hydrosulphite of soda solution, and greater care was exercised during its production in the mill. In time, the production of stable hydrosulphite of soda in fine crystals or powder became a commercial possibility, and in consequence the making of the solution of hydrosulphite in the mill became less and less common until very few mills made it at all.

Since the war directed attention to the great importance of the fast vat colors to our cotton mills, there has been a revival of interest in the making of hydrosulphite solution in the dyehouse for immediate consumption, in view of the threatened—in fact, actual—shortage of the dry, concentrated hydrosulphite of commerce.

To make a proper solution of hydrosulphite of soda requires that there should be at hand solution tanks of sufficient size to turn out the amount of finished solution for at least two days work. The accompanying sketch shows the general arrangement of such a plant, which is cheap to put up and maintain. If power stirring gear can be put

in, so much the better; if not, hand stirring may be resorted to, but should be left to a reliable man who will not go to sleep over his work.

Referring to the accompanying sketch, the several parts of the apparatus are conveniently arranged so that the solutions may travel by gravity from the highest tank to the lowest. A solution barrel of 50-gallon capacity is placed above, in which the bisulphite of soda is dissolved, the solution standing at 52° Tw. The outlet from this barrel leads into the measuring box containing exactly 12 1/2 gallons; this being the full charge of bisulphite solution of the above strength to run into the large reducing vat, which should have a capacity of not less than 200 gallons. This vat should be provided with a mechanical stirrer as previously mentioned, operated by means of a bevel gear. Close at hand should be two small tanks or vats which may be conveniently made by sawing a 50-gallon cask in halves. Each half is provided with a cover to protect the contents. One of these half-barrels should be used for zinc dust; the other for milk of lime, two pails of convenient size should be kept, one for each. The outlet from the large tank should be over a filter bag or strainer, in which the stock tanks for the completed hydrosulphite liquor stand. For convenience a launder may run from the filter bag to the second stock tank.



APPARATUS FOR THE PREPARATION OF BISULPHITE OF SODA SOLUTIONS

A solution of bisulphite is made up in the barrel, which will last for several days. The large tank is filled with 180 gallons of water which should be controlled by a graduated measuring stick. The bisulphite is run in, stirred for a few minutes to ensure uniformity, and then 8 lbs. of zinc dust made into a mud with 1 1/4 gallons water, is added in several portions during stirring. Stirring is then continued until the zinc dust appears to be evenly distributed through the 180 gallons of liquor. This will take about one hour. Then add in several small portions the milk of lime containing the equivalent of 10 lbs. of fresh burned lime. This mixture of lime may be made up and kept conveniently in the covered half barrel for several days. After the milk of lime has been added, stirring is continued for several hours, four to five hours being necessary to effect a complete chemical reduction of the bisulphite. As previously stated, if hand stirring is resorted to it should be done by a man who will keep at it and not allow either the zinc dust or the milk of lime to settle until the reaction between all the chemicals is complete. After five hours continuous stirring, the solution should be allowed to settle, preferably over night, when in the morning the clear liquor is drained off from the large tank, allowed to pass through the strainer or filter into the stock tank, when it is ready for use in the dye baths. After drawing off, the hydrosulphite from the large tank, the sediment remaining should be washed out, 180 gallons of fresh cold water run in and the operation repeated. By this means hydrosulphite can always be kept ahead of the dyeing operation. The following tables give the strength of bisulphite of soda and milk of lime and will be found convenient:

Table of Strengths of Bisulphite of Soda Solution

Specific Gravity	Degree Twaddle	Pounds Per U. S. Gallon	Per Cent. Bisulphite
1.008	1.6	8.40	1.6
1.022	4.4	8.52	2.1
1.038	7.6	8.65	3.6
1.052	10.4	8.77	5.1
1.068	13.6	8.90	6.5
1.084	16.8	9.03	8.0
1.100	20.0	9.17	9.5
1.116	23.2	9.30	11.2
1.134	26.8	9.45	12.8
1.152	30.4	9.60	14.6
1.171	34.2	9.76	16.5
1.190	38.0	9.92	18.5
1.210	42.0	10.08	20.9
1.230	46.0	10.25	23.5
1.252	50.4	10.43	25.9
1.275	55.0	10.62	28.9
1.298	59.6	10.82	31.7
1.321	64.2	11.01	34.7
1.345	69.0	11.21	38.0

Table Showing Amount of Lime in Milk of Lime

Degrees Twaddle	Lbs. of Lime Per Cu. Ft.	Degrees Twaddle	Lbs. of Lime Per Cu. Ft.
2	0.7	28	11.1
4	1.5	30	11.9
6	2.3	32	12.7
8	3.1	34	13.5
10	3.9	36	14.3
12	4.7	38	15.1
14	5.5	40	15.9
16	6.3	42	16.7
18	7.1	44	17.6
20	7.9	46	18.4
22	8.7	48	19.2
24	9.5	50	20.0
26	10.3	..	..

As hydrosulphite of soda, when made in the mill, is likely to vary in actual strength, it is found best to control its value by chemical analysis. The following method of assay is suggested as being the most convenient for this. There will be required a solution of indigotine in sulphuric acid; a 500 cc. conical flask; a 250 cc. graduated cylinder, and a 25 cc. pipette. The indigo solution is prepared by dissolving 2 grams of pure indigotine in sulphuric acid, and dilution to 1,000 cc. This should be made carefully, and preserved in a glass stoppered bottle.

The test is made by measuring 250 ccs. of this indigo solution in the cylinder and transferring to the flask, rinsing the cylinder out with a small quantity of water, and then running in from the pipette, carefully filled to the mark, the solution of hydrosulphite of soda, swirling the contents of the flask as the hydrosulphite is added so that the mixing is complete and until the blue color of the indigo is completely changed to a pale yellow, when the further addition of hydrosulphite ceases. The number of ccs. of hydrosulphite added, multiplied by 2 gives its value in relation to 1 gram of indigo. Indigo is used as the base against all the vat colors as compared when the efficiency of hydrosulphites are considered.

THE GERMAN EMBARGO ON DYESTUFFS

The Cassella Color Company makes the following announcement:

As announced in many quarters, the German Government on September 22d placed an embargo on the exportation of dyestuffs, only to be raised under the following stipulations—quantities exported must be not greater than usual amounts reaching America—shipments must be in American bottoms, and—guarantee must be given against re-exportation. On September 30th, at the invitation of the Department of State, a conference of importers and consumers was held in Washington at which we were represented by our Vice-President, and a committee was appointed to meet the emergency, of which the Hon. H. A. Metz was made chairman. The American S. S. "Matanzas" has been chartered in the name of A. M. Patterson, President of The Textile Alliance, and is now en route to Rotterdam in ballast. In this boat, it is understood, all the large dyestuff houses have been alloted space. Our source of supply has been notified and will meet the "Matanzas" with such quantities as are authorized by the German Government. These goods should reach here by the latter part of November. Meanwhile, we regret to say that there appears to be but little dyestuff on the way, the embargo having held up goods in transit and shipments crossing the frontier to the 22d of September having very generally reached port. As far as our observation goes, the "Matanzas" should finish its errand auspiciously, for the English authorities have made no objection to the arrival of dyestuffs in bottoms of any neutral power, and we have assurances that they are likely to continue this attitude. We regard it as unfor-

tunate, however, that conditions have brought about a situation opposed to the classic warnings against "having all eggs in one basket." Negotiations have now been initiated with the Holland America Line with a view to adding to their fleet a regular boat under the American flag. The American agents of the Holland America Line have met this proposition in a sympathetic attitude, and upon receipt of approval from their home office it is expected that they will be in a position to offer the dyestuff trade regular freightage which will fully comply with the requirements of the German Government as at present understood.

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THE GERMAN COMMISSION ON THE FASTNESS OF DYES

From the Dyer and Calico Printer

(Continued from October.)

Fastness of Dyed Wool to Bleaching

The dyed wool is sewn together with equal weights of white wool, cotton, and silk, and bleached with peroxide of hydrogen. The bleach bath is prepared with 10 gallons of distilled water, and 2 gallons of 10 to 12 volume peroxide, and made just alkaline with ammonia. The mixture is entered into this (forty to fifty-fold) at 45° to 50° C., and allowed to cool gradually for 12 hours, keeping the goods constantly immersed. The wool is then lifted, rinsed and dried. The types and the dyeings on which they are based are five in number, as follows:

1. Color altered slightly if at all, but bleeding on to all the whites. Dyed with 2 per cent. of Azo Yellow as above.

2. The color is paled, and all the three whites are very little affected by bleeding. Dyed with 2 per cent. of Patent Blue A.

3. The color is paled, but there is no bleeding. Dyed with 2 1/2 per cent. of Fast Yellow S, as directed for Azo Yellow under fastness to water, above.

4. Little or no change in the color, and no bleeding on wool, but a little on silk and cotton. Dyed with 2 per cent. of Chrysophenine G, as above.

5. Little or no change in the color, and no bleeding or very little on the white wool, cotton and silk. Dyed with 2 per cent. of Sulphoncyanine extra, and 20 per cent. of Glauber's salt, and 5 per cent. of acetate of ammonia, entering at 40° C., raising the temperature to from 80° to 90° C. in the course of half an hour, and keeping at that for about 45 minutes.

The five types under this head seem to be in violation of the condition which the Committee imposed upon itself, viz., to keep the types sharply separate without any graduation from one to the other.

Fastness of Dyed Wool to Milling

The samples are subjected to one of the following two different treatments:

A. Milling in neutral baths. The dyed wool is mixed with its own weight of white wool or cotton, and milled by hand at 30° C., in a forty-fold bath containing 20 grammes of Marseilles soap per litre. After a good kneading the wool is left in soak for two hours, again kneaded, rinsed and dried.

B. Milling in an alkaline bath. This is also done by hand, but at 40° C., and the bath contained 5 grammes per litre of soda ash, in addition to the Marseilles soap.

Effect on White Wool

1. Treatment A. Noticeable effect on the dyeing, and much bleeding on to the white wool. Dyed with 2 per cent. of Azo Yellow, as above.

2. Treatment A. Slight effect on the dyeing, and slight bleeding on the white wool. Dyed with Ponceau RR, as with Orange 2 above.

3. Treatment A. Little or no change in the dyeing, and no bleeding on to the white wool. Dyed with 6 per cent. of Sulphocyanine Black 2B.

4. Treatment B. Little or no change in the dyeing, but slight bleeding on to the white wool. Dyed with 2 per cent. of Chrome Yellow D, as above.

5. Treatment B. Little or no change in the dyeing, and no bleeding. Dyed with 7 per cent. of Anthracene Chrome Black P extra, as above.

Effect on the White Cotton

1. Much bleeding on the cotton. Dyed

with 2 per cent. of Diamine Scarlet B, as above.

2. Slight bleeding on the cotton. Dyed with 2 per cent. of Ponceau RR, as with Orange 2 above.

3. No bleeding on to the cotton. Dyed with 6 per cent. Sulphoncyanine Black 2B, as above.

The above were obviously treated as A, although the Roman numerals run on. This will at once be obvious because we have next.

4. Slight bleeding on the cotton (a repetition of 2). Dyed with 5 per cent. of Diamond Black F, afterchromed with 1 1/2 per cent. of bichromate of potash, otherwise dyed as above.

5. No bleeding on to the white cotton (a repetition of 3). Dyed with 7 per cent. of Diamond Black, as above.

Fastness of Wool to Carbonization

The sample is subjected for half an hour to immersion in sulphuric acid of 5° B., pressed till it contains its own weight only of moisture, and dried one hour at 80° C. It is then rinsed with 200 times its weight of distilled or soft water for 15 minutes, and afterwards neutralized for the same space of time in 200 times its weight of a solution of soda, 2 grammes to the litre. The neutralization is followed by rinsing with water till the rinse has no effect on litmus paper, either red or blue.

1. Color much altered. Dyed with 2 per cent. Alizarine Red W in powder. The wool was previously mordanted with 3 per cent. of bichromate of potash, and 2 1/2 per cent. of tartar preparation for 75 minutes at the boil, and the dyeing was done with 2 per cent. of acetic acid, entering at 30° C., boiling up in half an hour, and boiling for an hour and a half.

3. Color slightly altered. Dyed with 2 per cent. of Orange 4, 10 per cent. of Glauber's salt crystals, and 10 per cent. of tartar preparation for one hour at the boil.

5. No change of color or a very slight one. Dyed with 2 per cent. of Palatine Scarlet A, 10 per cent. of Glauber's salt, and 10 per cent. of tartar preparation entering at 60° C., bring to the boil in 20 minutes, and boiling for one hour.

Fastness of Dyed Wool to Potting

The samples are subjected to one of the following two methods.

A. The dyeing is mixed with its own weight of white wool and white cotton, and acted on for two hours at 90° C. in 60 times its weight of distilled water, rinsed and dried.

B. As A, except that Marseilles soap is dissolved in the water to the extent of 1 gramme per litre.

1. Treated as A. The dyeing is changed, and there is much bleeding on to the white wool or cotton. Dyed with 2 per cent. of Patent Blue A, as above.

3. Treatment A. Dyeing changed very slightly or not at all, and a little bleeding on to white wool and cotton. Dyed with 5 per cent. of Diamond Black F. as above, but afterchromed with 1 1/2 per cent. of bichromate of potash.

5. Treatment B. No change in the dyeing, and no bleeding on to white wool and cotton. Dyed with 7 per cent. of Alizarine Black WX extra, as above.

Fastness of Dyed Wool to Steam Pressing

The sample is subjected to one of the following two methods:

A. It is wrapped round a decatizing cylinder, and steamed for five minutes in a closed chamber at 30 lbs. pressure.

B. The steaming on the cylinder is done for 10 minutes, and at 52 lbs. pressure.

1. Color rather strongly changed. Treatment A. Dyed with 2 1/2 per cent. of Sulphoncyanine GR extra as above.

3. No change of color. Treatment A. Dyed with 2 per cent. of Croceine AZ, used as Brilliant Croceine 3B above.

5. Treatment B. No change of color. Dyed with 9 per cent. of naphthol Black 6B, and 10 per cent. of tartar preparation, entering at 40° C., boiling up in half an hour, and boiling gently for one hour.

Fastness of Dyed Wool to Sea Water

A solution is prepared by dissolving 30 grammes of common salt, and 6 grammes of

anhydrous chloride of calcium in a litre of water. The dyed wool mixed with its own weight of white wool is steeped for 24 hours in a cold forty-fold bath of this solution, and then dried without rinsing.

1. Color very little changed. Much bleeding on to the white wool. Dyed with 2 per cent. of Chrysoine, as above.

3. Color changed little or not at all. Considerable bleeding on to the white wool. Dyed with 2 per cent. Cyanol extra as above.

5. Color unchanged and no bleeding. Dyed with 6 per cent. Sulphocyanine Black as above.

Is it seriously contended that there is any reliable difference between 1 and 3?

Summary

It must be obvious to anyone who reads this article that nearly all the types require standardization among themselves. Thus we find, to take only one example out of any under the head of "Milling Fastness," when the dyed wool is mixed with white cotton, that the fastness is to be denoted by 1 when there is much bleeding from the wool on to the cotton, and by 2 when there is slight bleeding. Here we have an unstandardizable factor, dependent largely on the personal equation, introduced into a series of fixed types suggested as standards, no matter what dye has been used, as the standard is to decide only the fastness of a given dyeing under given conditions. Again, such phrases as "rather changed" occur under several headings.

The recapitulation of the methods of producing the dyeings from which the standards were made is useful as providing a means of making dyeings for comparison. No doubt, however, we shall have a further report in which the gaps will be filled, and in which many defects will be remedied. Pioneer work is always difficult.

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MACHINE FOR DYEING AND FINISHING FABRICS

The machine shown in the illustrations has recently been patented in this country and is intended for treating fabrics with liquids in dyeing, mordanting and degumming. Fig. 1 is a longitudinal section of the apparatus, showing the circulating system partly in elevation; Fig. 2 is a transverse section, showing the superstructure in elevation.

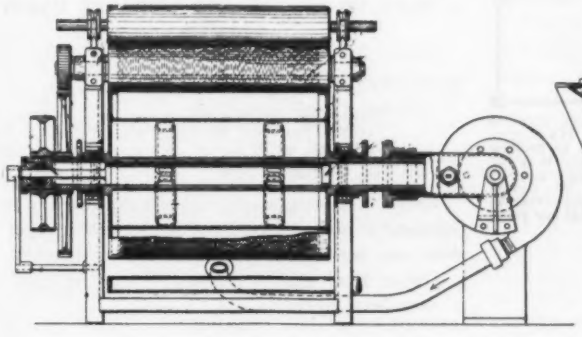

FIG. 1

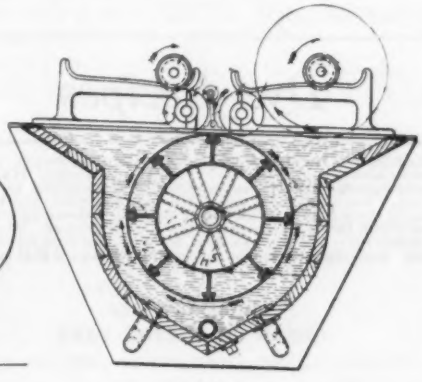

FIG. 2

The fabric is passed around a drum in the tank. A hollow cylindrical shell is closed at both ends and has a hollow shaft whose ends project beyond the ends of the cylindrical shell to form trunnions. The end walls of the shell are extended to form flanges, as shown in Fig. 1. Extending from one of these flanges to the other is a series of equally spaced radial walls. Extending from the one to the other of the flanges of the end walls and from the one to the other of the radial walls is a curved plate whose longitudinal ends are bent to an acute angle inwardly, as shown in Fig. 2, and fitted into longitudinal grooves in the enlarged outer ends of the walls. Each chamber communi-

cates with the interior of the hollow shaft by tubular spokes.

A circulating system is provided for the liquid in the tank, including a rotary pump connected at one end with one of the trunnions of the hollow shaft and the other end divided, Fig. 2, and connected with the bottom of the tank.

The fabric wound on either beam extends over the adjoining beam, thence down around the drum in the liquid, over the next beam and around the last beam. If the liquid which is squeezed out of the fabric at the point where the receiving beam bears on the adjoining beam is permitted to remain there any appreciable length of time, it is likely to discolor or mark them. To prevent this the beams are perforated so that any liquid which would otherwise accumulate may escape.

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Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

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Recipe No. 122

GREEN ON COTTON YARN

Oxamine Light Green B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Oxamine Light Green B.
(Badische & Co., 86 Federal St., Boston, Mass.)
20 lbs. Glauber's Salt (Crystal).

The addition of soda must be avoided.

Enter at 160° F. and dye at a boil for one hour.

Oxamine Light Green B possesses very good fastness to light.

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Recipe No. 123

BROWN ON COTTON YARN

Columbia Catechine O on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Columbia Catechine O.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
20 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Dye for one hour at 200° F. and then rinse.

Columbia Catechine O, especially if aftertreated in a bath containing

1 lb. Potassium Bichromate,
3 lbs. Blue Stone,
3 lbs. Acetic Acid,

will be found to possess very good fastness to washing for a direct cotton color.

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Recipe No. 124

RED ON WORSTED YARN

Lanaviol B on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Lanaviol B.
(Kalle Color & Chem. Co., 530 Canal St., New York, N. Y.)
20 lbs. Glauber's Salt (Crystal).
4 lbs. Sulphuric Acid.

Enter at 160° F. and dye at a boil for one hour.

Lanaviol B possesses high coloring power, and gives an excellent shade of bluish red of good fastness.

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Recipe No. 125

BLUE ON COTTON AND WORSTED UNION CLOTH

Union Blue 2322 on 100 lbs. union cloth. Prepare the dye bath with

2 lbs. Union Blue 2322.
(Innis Speiden & Co., 46 Cliff St., New York, N. Y.)
20 lbs. Common Salt.

Enter cold and work cold for 20 minutes, then raise to a boil and boil 20 minutes, then shut off heat and work in cooling bath for 20 minutes.

Union Blue 2322 is reasonably fast to light and a very level dyeing color.

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Recipe No. 126

YELLOW ON COTTON YARN

Benzoform Yellow G L Extra on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Benzoform Yellow G L Extra.
(The Bayer Co., 117 Hudson St., New York, N. Y.)
40 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Enter at 180° F. and dye at a boil for one hour, then rinse and aftertreat in a fresh bath made up with

2 lbs. Formaldehyde Tech.

for 20 to 30 minutes at 140° F. for one-half hour cold. Rinse again and dry.

Benzoform Yellow G L Extra, like the other Benzoform colors, is rendered fast to washing by this treatment with formaldehyde.

Recipe No. 127

GREEN ON COTTON YARN

Oxamine Light Green G on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Oxamine Light Green G.
(Badische & Co., 86 Federal St., Boston, Mass.)
20 lbs. Glauber's Salt (Crystal).

The addition of soda must be avoided.

Enter at 160° F. and dye at a boil for one hour.

Oxamine Light Green G possesses very good fastness to light.

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Recipe No. 128

BROWN ON COTTON YARN

Triazol Brown H Ro on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Triazol Brown H Ro.
(Geisenheimer & Co., 189 Front St., New York, N. Y.)
5 lbs. Soda Ash.
20 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for one hour.

Triazol Brown H Ro possesses very good fastness in most respects.

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Recipe No. 129

BLACK ON COTTON YARN

Naphtaform Black K on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Naphtoform Black K.
(Kalle Color & Chem. Co., 530 Canal St., New York, N. Y.)
40 lbs. Glauber's Salt (Crystal).
2½ lbs. Soda Ash.

Dye at a boil for one hour and then aftertreat at 120° F. for 20 minutes in a bath made up with

2 lbs. Formaldehyde.

Naphtaform Black K when dyed in this manner possesses very good fastness in most respects, and much better fastness to washing than the ordinary direct cotton color.

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Recipe No. 130

YELLOW ON WORSTED YARN

Quercitron on 100 lbs. worsted yarn. First mordant the yarn in a bath made up with

3 lbs. Potassium Bichromate.
2 lbs. Tartar.

Enter at ordinary temperature, bring slowly to a boil, and mordant at a boil for one and one-half hours. Wash and then dye in a bath made up with

15 lbs. Quercitron Extract.
(A. Klipstein & Co., 644 Greenwich St., New York, N. Y.)

Entering at 120° F., bring slowly to a boil, and dye at a boil for one hour.

Quercitron when applied in this manner gives an excellent shade of reddish yellow possessing excellent fastness.

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Recipe No. 131

BLACK ON COTTON YARN

Katigen Brilliant Black F G Extra on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Katigen Brilliant Black F G Extra
(Bayer Co., 117 Hudson St., New York, N. Y.)

dissolved with

15 lbs. Sodium Sulphide.

Then add

4 lbs. Soda Ash,
60 lbs. Common Salt,

and boil up the bath.

Dye at a temperature just below the boil for one hour.

Katigen Brilliant Black F G Extra gives a pleasing bluish shade of black of very good fastness.

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Recipe No. 132

YELLOW ON WORSTED YARN

Flavine Yellow on 100 lbs. worsted yarn. First mordant yarn in a bath made up with

4 lbs. Tin Crystals.
2 lbs. Oxalic Acid.

Enter at ordinary temperature, bring slowly to a boil and boil one hour.

Then dye in a bath made up with

7 lbs. Flavine Yellow.
(Klipstein & Co., 644 Greenwich St., New York, N. Y.)

Flavine Yellow when applied by this method gives a bright yellow possessing very good fastness.

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Recipe No. 133

GREEN ON COTTON YARN

Azerole Green G G X on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Azerole Green G G X.
(Innis Speiden & Co., 46 Cliff St., New York, N. Y.)
20 lbs. Common Salt.

Enter at 160° F., raise to a boil and dye at a boil for 45 minutes.

Azerole Green G G X is a very level dyeing color, quite fast to light and is also excellent for the dyeing of cotton and wool mixed piece goods.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Roll Covering Fabric. The Roll Fabric Co., of Providence, R. I., is introducing a patented fabric for covering spinning rolls which does away with the use of leather cotts. This fabric consists of a high-grade wool roller cloth coated by a special process with a compound similar to leather in appearance and having its peculiar drawing and spinning qualities. This fabric is then cut into strips of suitable width to fit spinning and drawing rolls. It is glued directly to the iron rollers and is claimed to combine both the necessary cushion and spinning surface in one fabric, giving a uniform covering to the rolls which does not vary in thickness and is entirely free from hard or soft spots. A number of cotton mills are reported to have tried out this fabric with excellent results.

Dewing, Conditioning and Shrinking Machine. A. W. Buhlman, 200 Fifth Ave., New York, is placing on the market an improved machine for dewing, conditioning and shrinking woolens and worsteds. A description appears in this issue.

Cut Marker. The Saco-Lowell Shops, Lowell, Mass., are placing on the market the Fulton cut marker which is attached to the slasher and marks the warps so as to make identification easy. A description appears in this issue.

Cloth Cutting Machine. J. A. Firsching, 614 Broad St., Utica, N. Y., has added new features to his "1912" cloth cutting, folding and winding machine, which save time, labor, machinery and cloth. The machine cuts the cloth, folds the edges, rolls it up and gives the measurements of every piece of cloth going through the machine. Its saving is claimed to be so great that only one machine is required where formerly two were needed and an extra strip is obtained from every bolt of cloth.

Time Recording Device. The Follett Time Recording Co., 675 Hudson St., New York, are introducing to the textile trade their improved time stamp and recorder, which is described in another part of this issue.

Stop Motion for Spoolers. The Saechsische Webstuhlfabrik Louis Schoenherr, Chemnitz, Germany. An improved device for stopping a spooling machine when a thread breaks.

Dyeing Turkey Red. Julius Graf, Bombay, India. An improved process for dyeing Turkey red which is said to possess a number of important advantages over the ordinary method.

Weighting Silk. Dr. Ernst Stern, Hannover, Germany, has recently brought out a process for weighting silk with zircon salts.

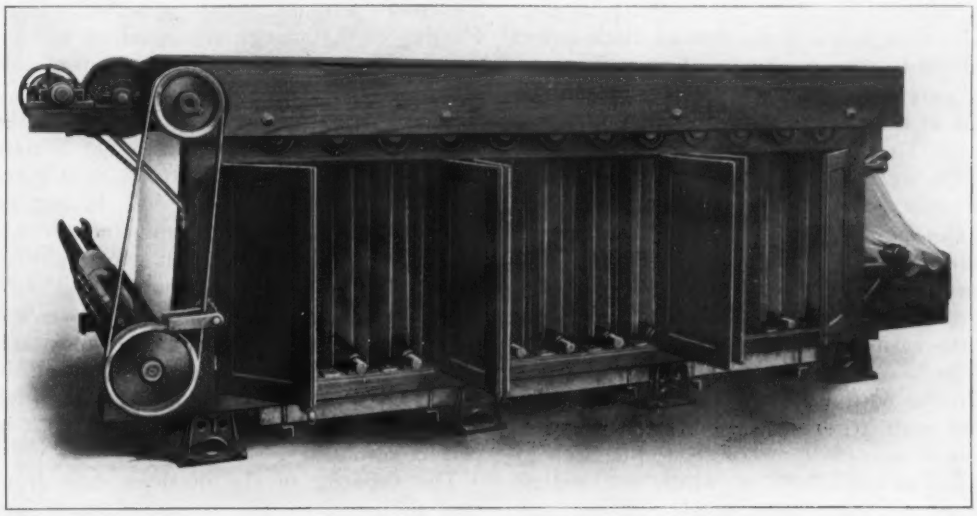
Steaming Rolls. J. Brandwood, Bury, England. A perforated roller of improved construction for steaming cloth. It is also adapted for dyeing goods.

Air Pump for Wool Washers. F. Bernhardt, Leisnig, Saxony, Germany. An air pump for lifting and circulating the liquor in scouring machines. It takes the place of a centrifugal pump and is said to be much more durable.

Tying Bands. Paul Schlitte, Leipzig-Schleussig, Germany. A device for facilitating the tying of bands on spinning machines. The banding, while being tied, is held in position by the attachment, thus ensuring a uniform length when put on the spindle.

THE MANUFACTURERS' COOLING AND CONDITIONING MACHINE

The textile trade in the United States has but recently become awakened to the great importance of keeping the proper amount of moisture in textile materials when they are purchased and sold. The discussion of the cotton schedule during the recent revision of the tariff was an eye-opener, not only to the law makers, but to textile manufacturers, few of whom realized the wide variations in weight of textile materials resulting from the change in the quantity of aqueous vapor present. As we showed in our October, 1913, issue, the changes of temperature at Boston during the year 1912 were such as to cause a variation of 6 per cent from the weight when the material contains the standard allowance of water. From this fact it will readily be understood that the processes of drying and pressing, during which cloths are subjected to a very high temperature, would result in even greater losses of weight. Tests have shown that wool cloths lose from 5 to 10 per cent by being pressed hot in the ordinary rotary press. This loss is due to the evaporation of the natural moisture in the goods. As wool cloths are usually packed soon after pressing the mill sells the goods at the reduced weight, and thus suffers the same loss that would result if an equal amount of material were destroyed or stolen. For example, if a mill is making cloth to weigh 16 ounces per yard and the rotary press is reducing the weight of the goods 5 per cent by the evaporation of natural moisture, it will be necessary to make the goods weigh 16.8 ounces per yard in their natural condition in order that they may weigh 16 ounces when pressed. In other words 5 per cent more stock is used than is necessary. In a mill producing 5,000 pounds of wool goods per day, valued, say, at $6,000, this is a loss of $300 per day or $90,000 per year, the amount depending on the size of the mill, class of goods and kind of finish.



THE MANUFACTURERS' COOLING AND CONDITIONING MACHINE

In addition to this heavy loss the evaporation of the water in wool cloths results in a decided injury to the appearance and handle of the fabrics, the best results being obtained only when the goods contain the natural amount of moisture.

These serious difficulties can be remedied only by restoring the natural moisture which the finishing process has removed. The difficulties encountered in this work are high cost and lack of uniformity in the moisture. It is to remedy these difficulties that Ivar L. Sjostrom, of Lawrence, Mass., has invented and placed on the market the "Manufactur-

ers" cooling and conditioning machine, shown in the accompanying illustration, and which is built by the Manufacturers Machine Co., 660 Essex St., Lawrence, Mass.

The machine is based on the operation of natural laws, and cheaply and expeditiously produces to perfection the results that have hitherto been crudely striven for, often at considerable cost, and with far from satisfactory results. The construction and operation of the machine is very simple as will be readily understood from the illustration. It consists of a case, about twelve feet long, six feet wide, and six feet high, which is entirely closed except for the openings at each end, through which the treated cloth enters and leaves the machine. Within the case, and extending from side to side, are driving rolls at the top, and guide rolls at the bottom. The driving rolls are individually driven, so that there is no tension applied to the cloth. The cloth to be treated enters at b, and passes partly around the first top driving rolls, then downward to the first bottom guide roll, e, then up to the next driving rolls, and so on, until it finally passes out of the casing at c, and is then either rolled up, or folded into a truck.

In the bottom of the case are trays, supplied with fresh running water, which is brought into close proximity to the cloth by means of conveyors, k, which are endless aprons revolving very slowly. These conveyors are located in each space between the cloth guiding rolls, and the lower parts of these aprons constantly dip into the water, and this exposes a continuous, cool, wet surface close to, but not touching the cloth.

The principle on which the machine operates is based on the well-known fact that textile fibers in their normal state contain a certain amount of moisture, and if deprived of it through drying, they will readily reabsorb it, if given a proper opportunity. To subject great lengths of cloth to a humid atmosphere in such a way as to insure uniformity of absorption and expeditious handling, has hitherto been impossible. The usual methods of hanging up cloth in a damp room, or of placing rolls of cloth in a similar place, require much time and labor, and fail to insure uniformity, which is of paramount importance in the finishing of textile fabrics.

When goods are examined in a hot and dry condition from the dryer or press, they often show signs of shadiness, or other unevenness in the color. This may be due to nothing more than the uneven cooling of the cloth, owing to the cloth being unevenly exposed to the air, and thus unevenly absorbing moisture, which has the effect of making the color seem uneven. A great deal of cloth is condemned on this account, and sent back to the dye house to be evened up, when the color on the piece may be perfectly level. Passing cloth through this machine will insure perfectly even cooling, both from side to center and from end to end.

Apart from the weight restored to the cloth, it is important that it should contain the normal amount of moisture, as it gives the cloth better luster and feel; in fact, in the early days of cloth manufacture, it was customary to hang cloth out over night, in order to give it an opportunity to absorb moisture. This machine gives, in a few minutes, the same result in gain of moisture, as would be obtained by leaving cloth out in open folds over night, but it does more, for it treats the cloth uniformly, and leaves it in perfect condition.

The capacity of the machine runs from two thousand to five thousand yards per day, depending on the fineness of stock, weight of cloth, closeness of weave, etc. If the cloth is passed through the machine after drying, it will cool the cloth uniformly, and enable the rough perching to be done with intelligence. It will also leave the cloth in the best condition for shearing and pressing. It should then be passed through the machine after pressing, which will restore the moisture which has been removed by the press, and give proper weight and feel to the fabric.

The machine does not reduce the length or width, in fact most fabrics show not only an increase in weight, but also an increase in length and width, and every driving roll being positively driven insures that there is no tension on the cloth, nor does the machine

affect the finish in any way. The machine will require hardly any repairs as all parts are slow moving, and the power required to run it is so small as to be of little importance.

Careful tests of the machine have been made by Arthur D. Little, Inc., chemists and engineers of Boston, Mass., and William D. Hartshorne, formerly agent of the Arlington Mills, and now a consulting engineer at Lawrence, Mass.

Following is an extract from the Little report:

The test showed that dry finished cloth on being passed through this machine, absorbed 5 to 7 per cent. of its own weight of moisture and emerged from the machine well cooled, improved as to feel, and free from any visible or tangible signs of uneven or excessive moistening.

We have but little doubt that conditions as to speed through the chamber and temperature and percentage of humidity therein can be so controlled as to give substantially the standard humidifying effect that is desired. Other collateral advantages lie in the even and satisfactory cooling of the cloth and in the evenness of the moisture content. This latter point is one of no small importance, since irregular moisture content may cause an appearance of spottiness or shadiness in the dyeing, even in a piece where this is actually satisfactorily level. If such a condition obtains, the evening out of the moisture content in the Sjostrom machine will correct the misleading appearance and may in certain instances obviate unnecessary re-dyeing. It is important to note that these advantages are obtained without bringing about any substantial change in the length or width of the piece of cloth treated. Our tests seem to indicate a slight and consistent increase in both length and width.

The following is taken from Mr. Hartshorne's report:

The commercial benefits of the machine in many directions are obvious. On many fabrics, depending upon their construction, there may be expected a permanent increased length, without a material change in width. The improvement in feel and handle found is equally important from a value standpoint. It is well known that many of the difficulties of the examiner in judging of the trueness of colors and their evenness are caused by an unequal state of dryness and of temperature.

A quick passage once through this machine would render an accurate judgment possible without the well known delay "to cool off." On the other hand there would seem to be no possibility of injuring the most delicate finish once attained, beyond what any ordinary exposure to atmospheric changes of condition, not involving rain or sunshine, would entail.

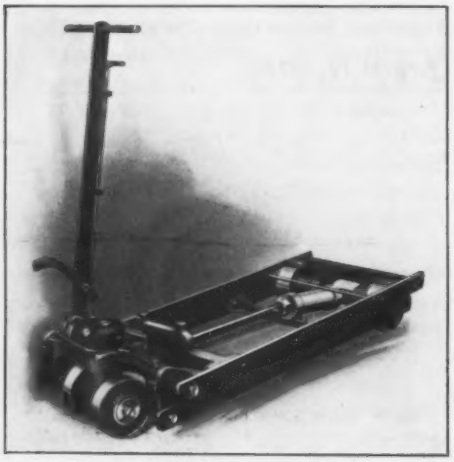
Details of Tests Made on August 17, 1914.

Fabrics	Weight			Length		Width	
	Before Cooling	After Cooling	Per ct. Gain	Before Cooling	After Cooling	Before Cooling	After Cooling
	lbs.	lbs.		yds.	yds.	in.	in.
Gabardine Worsted warp Cotton filling	39	41	5.13	61	62.13	57.63	57.63
Serge Cotton warp Worsted filling	34.75	36.75	5.75	53.37	54	58	58.50
Panama All worsted	29.75	31.75	6.70	66.13	66.75	54.88	55.63
Suiting All wool	29.75	31.75	6.70	67.13	67.88	56.25	56.63
Fancy All worsted	32.50	34 50	6.15	58.25	58.75	54.75	55.13
Serge All worsted	31.50	33 25	5.50	57.25	57.75	52.37	53.25
Cloaking All wool	54	56.75	5.10	56.75	57.25	54.37	54.75

The textile and other industries in the United States have been steadily increasing their consumption of synthetic dyestuffs, but the large increase has been supplied from chemical works in the United States, the value of whose output was $10,912,224 in 1904, and $16,428,676 in 1909. Adding the imports to the domestic production there was aparently a consumption in the United States in 1909 of over $25,000,000 worth of these articles.

TRUCKING EFFICIENCY IN TEXTILE MILLS

Since the advent of elevating trucks, the National Scale Company, Chicopee Falls, Mass., have concentrated months of experimental effort in an endeavor to supply the textile industry with a type of National Chapman elevating truck suitably adapted to their particular requirements. A careful study of trucking as it is now accomplished and as it should be accomplished in this particular field where so many operations are necessary to complete the finished product



THE NATIONAL CHAPMAN ELEVATING TRUCK

has resulted in the construction of the new 1915 model of National Chapman elevating truck, shown in the illustration. The exclusive features embodied therein are these:

1st. Complete turn of front wheels. This is all valuable for congested aisles or narrow shipping platforms.

2nd. One hand release. Eliminates foot lever and makes it much more convenient to raise and lower truck.

3rd. New application of the National Chapman check for lowering loads. This saves operating time and does away completely with the liability of the piston rod buckling because compression of pump is secured on outward motion of piston.

The National Chapman elevating trucking system prevents loss of time in rehandling and unloading operations, loss of material due to rehandling damage, and eliminates congested conditions of floors caused by the necessity of storing idle trucks.

Among the many uses for which this system can be used by the textile industry are: Trucking yarns on spools, wool bales, cotton bales, boxes of yarns, at the end of folding machines, for carrying warp beams, ball warps, carrying filling boxes to the weave room, etc. In these and many other processes a combination of multiple platforms and the National Chapman elevating truck will effect a saving of from 50 to 90 per cent. in former trucking costs.

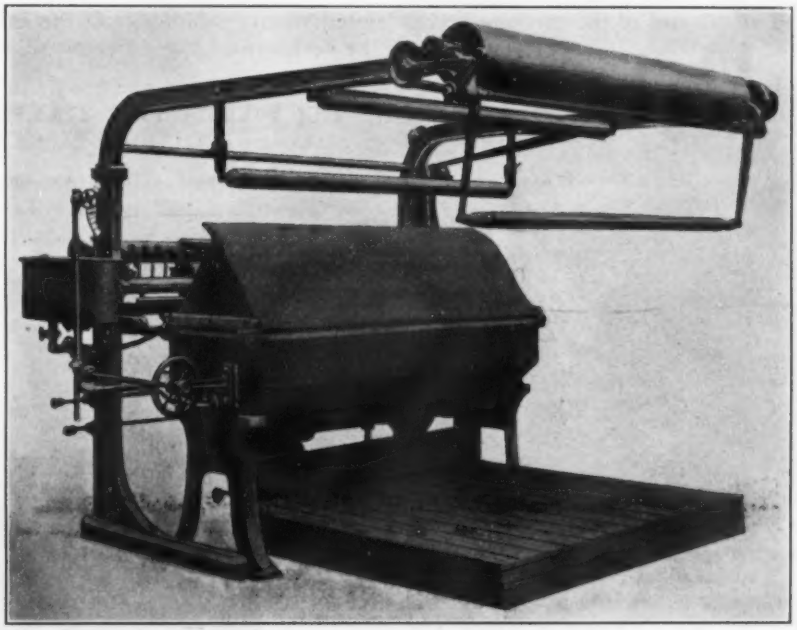
An attractive catalogue will be sent to the address of any textile manufacturing establishment. Views of the National Chapman in actual operation are shown. Requests should be made to the National Scale Company, Department "T", Chicopee Falls, Mass.

A DEWING, CONDITIONING AND SHRINKING MACHINE

In finishing woolen and worsted fabrics much depends upon a proper regulation of the moisture in the goods. The quality, appearance and handle are all improved by applying the right degree of moisture to the cloth under proper conditions. The machine, shown in the illustration, which is built by A. W. Buhlmann, 200 Fifth Ave., New York, has been especially designed for dewing, conditioning and shrinking woolen and worsted goods by the application of both steam and water. The steam is applied by means of perforated pipes arranged in a specially constructed steam box. Means are provided for carrying off the water of condensation so as to prevent dripping and spotting of the goods.

The water is applied by a dewing arrangement provided with nozzles and an air pump which blow the water in a fine, regular spray upon the fabric. This combination of steam and water gives unusually good results. The nozzles are designed so as to give a very fine spray that can be regulated with great precision. The spray is applied uniformly

throughout the piece, an automatic device preventing the nozzles from becoming clogged or getting out of order. The quantity of moisture applied is indicated by the pointer on a dial numbered from 1 to 10. With the pointer at 1 the machine is at a medium speed and the moisture applied will increase the weight of 50 yards of 18 to 20 ounce goods by about 4 pounds. When set at 10 the increase in weight is about 15 pounds per 50 yards.



A DEWING, CONDITIONING AND SHRINKING MACHINE

This machine greatly improves the handle and general appearance of the cloth. It adds weight with a uniformity not hitherto attained. It is capable of a large production, the medium speed being about 15 yards per minute. It is easy to operate and has no parts liable to get out of order. It is sold at a reasonable price and is adapted for all fabrics, from the lightest to the heaviest woolens and worsteds. In addition to the improvement in the finish, it shrinks the goods making them ready for the needle. Further information regarding this interesting machine will be supplied on application to Mr. Buhlmann.

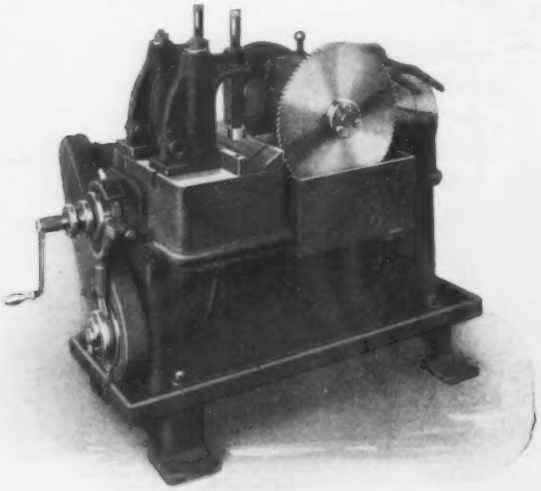
THE BURR COLD SAW

The illustration shows the improved cold saw for cutting metals which is built by John T. Burr & Son, 429 Kent Ave., Brooklyn, N. Y. It will be of interest for master mechanics in textile mills. This saw uses a blade 14 inches in diameter cutting stock up to 5 inches round, 4 inches square and flat up to 3 by 6 inches. The saw blade is 5/32 inch thick with constant relief from rim to center so that it can be ground until the diameter is reduced as much as is profitable. It is held to the arbor collar by three screws and runs in an extra large oil basin, which will hold the chips of at least a day's cutting. A grinding device is supplied with each machine.

The drive consists of a splined rod, parallel to the bed, to which is feathered a steel worm of large diameter, carried in a worm-bracket attached to the carriage. The worm is provided with ball thrust bearing and meshes with a carefully hobbed bronze rim worm-wheel, and then, through a pair of wide face steel pinions, drives the saw-arbor. The arbor is made from a forging, the collar being

solid with the arbor. The tight and loose pulleys are 12 inches in diameter for a 3-inch belt and should run 460 revolutions per minute toward the machine on top.

The feed is positive through a screw actuated by ratchet and double pawls, either one or both of which are used, the travel of the pawls being varied by changing the pin in the double eccentric, the latter being driven from the side shaft through chain and sprockets. The feed is engaged by simply throwing in the clutch and is automatically disengaged at the end of the carriage travel.



AN IMPROVED COLD SAW FOR CUTTING METALS

The carriage is heavy and is substantially gibbed to the bed. The saw-arbor and worm-wheel shaft are of ample diameter and have long bearings. The carriage has a travel of 6 1/2 inches on the bed, adding to the usefulness of the machine on special work.

A stock stop is provided so that any number of pieces may be cut the same length without the necessity of measuring each. Any of the drilling compounds or cutting oils may be used in the oil pot, but machinery or lubricating oil should not be used as it has a tendency to dull the teeth of the saw blade. The blade should never be run without lubricant when cutting iron or steel. Heavy oil or grease should be used in the worm-bracket.

The motor drive is compact and satisfactory, the motor being mounted on a substantial platform bolted to the frame, the connection between motor and side-shaft being made through rawhide pinion and cut gear, these gears being covered by a guard. The motor is usually 2 h. p., running about 1,800 revolutions per minute. John T. Burr & Son can furnish motor-driven machines complete for any specified current, direct or alternating, or can furnish them complete except electrical apparatus.

The time required to remove the saw from the arbor, grind and replace it will not exceed twenty minutes, and the grinding may be performed by any person about the shop.

THE FOLLETT TIME STAMPING AND RECORDING CLOCK

The illustration shows the time recording clock manufactured by the Follett Time Recording Co., 675 Hudson St., New York. This time stamp is used wherever an accurate and permanent record of any transaction is required. In connection with an improved gauge and a simple card system it can be used in factories to indicate the "in" and "out" time of the employes as well as the time consumed by an employe on any piece of work. Where a small number of hands are employed it will do the work of the more expensive time recorder. It is of very durable construction so that it can stand the constant pounding to which all time stamps are subjected. The movement is entirely

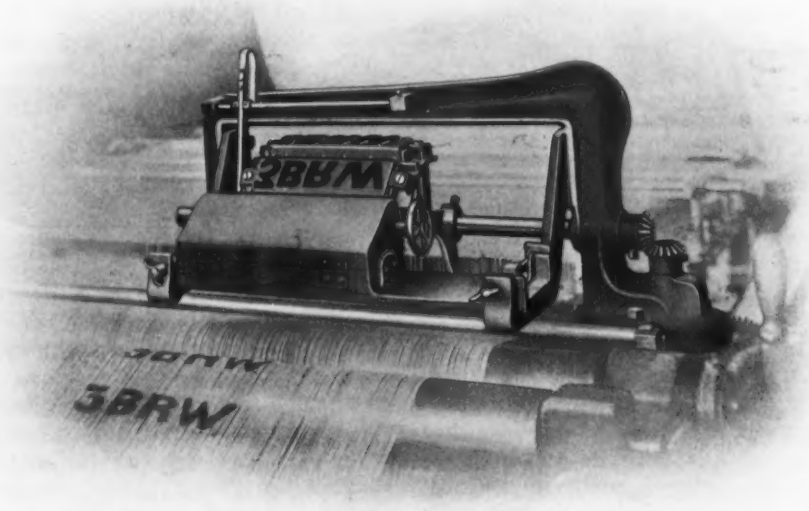
A TIME-RECORDING CLOCK

separate from the printing mechanism. The movement actuates the printing mechanism by means of a patented device in such a way that the time keeping qualities of the clock are never disturbed. The time stamps are made in two styles; one records every minute of the day and night and the other records in tenths of the hour. The decimal system is used a great deal in cost keeping.

In addition to the time and date the Follett time stamp will print at one operation the name of the company or firm and the address, along with as many as six different words, such as "answered", "recorded", "received", "paid", or other terms desired. Any one of these words can be printed at will by turning the revolving cylinder on which they are engraved. All parts of the Follett time stamp are interchangeable. They are made of the best material and subjected to severe tests before leaving the factory. Many establishments in the textile trade will find the Follett stamp of great value, not only for keeping the time of the operatives, but for many other purposes, particularly in connection with cost records.

THE FULTON CUT MARKER

The illustration shows the Fulton cut marker built by the Saco-Lowell Shops, 77 Franklin St., Boston, Mass. It has been found very useful in preventing mistakes and mix-ups where a number of similar patterns of cloth are made in the same mill. It sometimes happens that the tag is lost from the warp beam, making it necessary either to recount the ends on the beam or run the risk of a spoiled pattern. By equipping the slasher with the Fulton cut marker these annoyances and losses will be prevented.



THE FULTON CUT MARKER

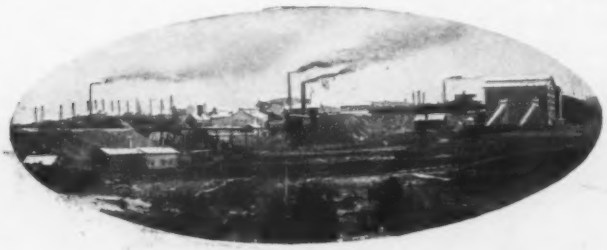
The pattern number or style mark is printed on the warp threads themselves and can be repeated at intervals as frequently as desired to conform to the standard lengths of cuts. When looms are stripped, the cloth is cut between the marks. These are in duplicate, thus leaving one on each end. The roll is now fixed for identification through succeeding processes. The cut market can be used with either fast or bleaching colors. It swings back out of the way to lay the yarn in the comb.

This marker is in successful use in a num-

ber of large mills. Full information regarding it can be obtained on application to the Saco-Lowell Shops.

BUILDING MATERIALS NOW MADE OF ROCK

The marked increase in disastrous fires is directing more attention every day to the need of fireproof building materials that can be relied upon. The failure of many so-called fireproof materials when subjected to the intense heat of large conflagrations suggests the need of more careful judgment in the choice of these materials as well as a more stringent interpretation of fireproof building regulations.



AN ASBESTOS MINE

A PIECE OF CRUDE ASBESTOS

The demand for building materials that would not be affected by fire has encouraged manufacturers to experiment with all kinds of materials, but the only one that has thus far successfully withstood all tests is asbestos. Asbetos runs in veins usually nearly parallel to the ground, in various thicknesses from a mere line to three or four inches thiek. Some of these veins, however, reach a depth of 200 feet. In mining this rock, after removing the surface of the earth, the rock is drilled and blasted the same as granite or any other stone.

Deposits of asbestos are found to a limited extent in Russia, Italy, Egypt, India, South Africa and, in fact, in all parts of the world. But that which is mined in Canada is about all that is of much commercial value as other varieties are either too brittle to utilize or too hard to mine. By far the largest of these Canadian mines is owned by the H. W. Johns-Manville Co., of New York.

This asbestos rock, when properly worked, produces long silk fibers, which are manufactured into fireproof goods of various kinds, the most familiar of which, no doubt, is the Asbestos theater curtain. These rock fibers are made into felt, much along the line that the felt for hats is manufcatured. This felt is then saturated with Trinidad asphalt, after which several of the sheets are cemented together with this material and made into ready roofings.

For shingles, the rock fibers are mixed with Portland cement and other ingredients, put into moulds of various sizes and shapes and subjected to hydraulic pressure. The various colors are mixed with these ingredients, producing shingles of a number of handsome shades. Asbestos wood or lumber is also made in much the same manner as the shingles. This is furnished in slabs of varying sizes, so that it can be easily used for making fireproof partitions, fire doors, booths for moving picture machines, etc. Another use that is made of this material is in stucco, also wall plaster. Here the asbestos fibers take the place of hair ordinarily used and the asbestos rock takes the place of sand. Then there are pipe coverings and a number of other things used in building construction made of this material. Another material which is fast gaining favor, chiefly because of its fire retarding qualities is mastic for floors.

The importance of fireproof construction cannot be overestimated. That architects and builders are fast realizing this is shown by the big increase in the substitution of fireproof building materials for those of an inflammable nature.

HYGROMETERS FOR TEXTILE MILLS

BY SIR HENRY CUNYNGHAME, K.C.B.

A Memorandum submitted to the British Committee on Humidity in Textile Mills

The instruments for the detection of humidity are of three classes. In the first place there are those which depend on the expansion of hygroscopic substances. Among these, a hair cleansed by soaking in a weak solution of carbonate of soda would be a good one, were it not that the constant of extension varies from day to day, so that repeated calibration is necessary.

The dew point instruments of the Daniell or Regnault type are objectionable as involving a considerable waste of ether.

The weighting of a given tuft of cotton by a delicate balance would be accurate were it not that the cotton is liable to become covered with dust, and thus give false readings.

There remains, therefore, the present instrument, the dry and wet bulk thermometer. This instrument depends on the theory that when the air in the room approaches the wet bulb it absorbs from the bulb sufficient moisture to raise its humidity to saturation point, while at the same time it loses sufficient heat to cool it down to the temperature of the wet bulb. Hence, the quantity of heat lost by the air (together with the vapor already in it) will be equal to the quantity of heat necessary to convert into steam a quantity of water sufficient to saturate that air. From this we get an equation establishing a relation between the difference of temperature of the wet and dry bulbs and the proportion of humidity in the air. These relations have not only been calculated by Regnault and others, but also made the subject of accurate experimental observations by Glaisher. Whence it results that subject to what is hereafter said about draughts and fanning, a dry and wet bulb thermometer properly used, gives a very accurate figure for the humidity of the air.

But several precautions are necessary in its use:

1. In the first place the instruments ought to be screened from the observer. So much heat is given off from the body as to raise the dry bulb thermometer one or two degrees in a few minutes, and so much moisture is given off as will also raise the wet bulb one or two degrees. This can easily be verified by anyone, and hence the observer should suddenly approach the instrument and read off the temperatures at once without any delay.

Again, radiation much affects the instruments, if one is hung on a cold, wet wall in the early spring the dry bulb becomes several degrees lower than the air temperature of the room, and the wet bulb temperature rises until sometimes they are almost equal in a room where the difference is in reality four or five degrees.

This may be easily verified by experiment, and that it is due to radiation to the wall is shown by the fact that the phenomenon ceases when the wall is covered by a board, or cloth, or even several thicknesses of brown paper. Whence the frames of the instruments should be of metal which is very pervious to heat, and should be kept well away from the bulbs. The very different readings that can be obtained from these instruments are shown by the records from five instruments placed in different parts of the same weaving shed. I have also compiled a set of readings of two instruments, one hung on an outer wall on a nail and the other hung about two feet off on the same wall, but with several sheets of thick brown paper put between it and the wall. The differences are very striking and show the effect of wall radiation. An instrument put near a belt is fanned by it, and I also found differences from this cause. As a rule fanning drove down the wet bulb, but raised the dry bulb; all, however, depended on the position of the instruments. It may seem anomalous that fanning should change the reading of instruments, but it certainly has that effect, and when they are hung near warm walls, I think that the effect of fanning upon the walls is considerable.

I may add that the form of the instrument in actual use in Manchester leaves much to be desired. Glaisher's recommendation that the wet bulb should be at least three inches away from anything else, is ignored, and it is put close to the reservoir, and about a half

inch from an iron grating that can conduct heat or cold to it from the walls or from any iron pillar against which it is hung. It is also very tiresome to read.

In connection with this subject the question arises how far drafts or fanning affect the readings of wet and dry bulb hygrometers. The subject has been investigated by Jelinck, an American scientist. From his observation it would appear that fanning has considerable effect. For instance, when the dry bulb is at 68° F. and the wet at 50°, some 3° of difference can be produced by a strong wind upon the wet bulb indicative of an enormous difference of percentage of humidity. I find practically that fanning with the dry bulb at say 60° F. and wet at 53° F. makes the difference of from 1 1/2° to 2° of difference of temperature.

Glaisher's tables are constructed for a medium wind, and consequently, if applied to readings taken in still air, have a tendency to make the room appear to be more damp than it really is. In fact, a slight fanning is necessary I believe to a correct estimation of humidity by means of the use of wet and dry bulb instruments in connection with Glaisher's tables. I am inclined to think, therefore, that this question how the instruments are to be used merits attention.

In order to minimize the difficulty of reading the instruments I have devised a form of differential hygroscope. It consists of two thermometers, one, the dry bulb, being filled with alcohol colored red, the other, the wet bulb, with alcohol colored blue, with the stems in close juxtaposition, and the scales so arranged that the columns are at the same level when the differences between them are the differences permissible under the rules. Hence, to see whether the factory is being kept as required by the Act, it is only necessary to see whether the red is above the blue without troubling to take any readings at all. Such thermometers can be made to obey any desired law and are easy to see.

In order to get rid of the cambric covers and the wick, I have substituted a tobacco pipe fed with water by a bird-bottle. This keeps much more clean, and has the incidental advantage of requiring the water to be renewed less frequently and being far less sensitive to temporary changes, so that the presence of an observer affects the readings but little.

The bulbs stand well out from the wall, and hence are not much affected by radiation. Another plan is to arrange a pair of air thermometers so as to work differentially, not volumetrically, as in Leslie's plan, but by pressure on a water column. There bulbs can be made either of equal size or else unequal. In the first case the reading will be .77 inch for each 1° F. of difference. Assuming that the bore of the connecting tube is small, this quantity will be independent of the size of the bulbs. Each bulb must have a vent tap to allow of adjustment. If the bulbs are of unequal size, then the amount shown on the scale by a given difference of bulb temperature will vary with the temperature, and we can obtain the same results as in the differential instruments mentioned above. This instrument can be arranged so as to show at a glance (1) whether the wet bulb is above or below 75; and (2) the difference between the dry and wet bulb readings, so that one can see at a distance of about ten feet and without the necessity of any table, whether the conditions are in conformity with the Acts and without reading the temperatures or being obliged to refer to any table.

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During the last half-century wool and worsted manufactures in England have increased enormously both in volume and value, yet the number of persons engaged in the industry has been almost stationary. In 1861 220,892 persons found employment in wool and worsted manufacture, in 1871 the number had increased to 235,235; in 1901 209,740 were engaged, and in 1911 the total was 222,679. Incidentally, it may be mentioned that the number of persons engaged in cotton manufacture increased in the same half-century from 458,239 to 605,177. The aggregate increase in wool and worsted manufacture was only 2.7 for the fifty years, against an increase of 29.5 in cotton manufacture.

Personals

Frank W. Curry, formerly superintendent of the Nottingham Mill, B. B. & R. Knight Co., Providence, R. I., has resigned his position with that company to accept the general management of the Postex Cotton Mills, Post City, Texas.

William Deacon, Jr., has been appointed agent of the Forest Mill, American Woolen Co., Bridgton, Me.

Leon C. Dean has succeeded George F. Waters as agent of the Globe Thread Mill, New England Cotton Yarn Co., Fall River, Mass.

Frank Kerr has been appointed superintendent of the No. 6 Mill of the Renfrew Mfg. Company, Maple Grove, Mass. Mr. Kerr has had years of experience in spinning cotton yarns, but resigned a position as foreman on account of ill health. Recently he has been employed as a conductor on the Berkshire St. Railway.

J. W. Riley, in charge of the mule spinning at the Booth Manufacturing Co., New Bedford, Mass., has resigned to accept a similar position with the Paul Whitin Manufacturing Co., Northbridge, Mass.

William Brierly, overseer of spinning at the Ballou Mill of the Attawaugan Co., Ballouville, Conn., has resigned his position with that company to accept a similar one at New Bedford, Mass.

William C. Hall, overseer of finishing at the Merrimack Woolen Co., Lowell, Mass., has severed his connection with that company.

Arthur Torry has accepted the position of overseer of finishing at the Merrimack Woolen Co., Dracut, Mass. He comes from Clinton, Mass.

Loren N. Foss, who has had charge of the dyeing department at the Slatersville Finishing Co., Slatersville, R. I., for the past six years, has resigned to accept a similar position with a large mill at Waltham, Mass.

Byron A. Smith has accepted the position of overseer of ring spinning at the Androscoggin Mills, Lewiston, Me. He was formerly employed at the Amoskeag Manufacturing Co., Manchester, N. H.

George W. Harrington has accepted the position of overseer of carding at the Greenblatt Asbestos Manufacturing Co., Reynoldsville, Pa.

F. Cole, general manager of the R. D. Cole Manufacturing Co., Newnan, Ga., has been elected president of the corporation to succeed the late Peter B. Murphy.

C. C. Clark has been appointed superintendent of the Harden Manufacturing Co., Worth, N. C. He comes from Bessemer City, N. C.

S. G. Touchstone has accepted the position of overseer of carding at the Fulton Bag & Cotton Mills, Atlanta, Ga. He was formerly employed as superintendent of the Great Falls Manufacturing Co., Rockingham, N. C.

C. S. Culverson has succeeded J. J. Ward as superintendent of the Dixie Cotton Mills, LaGrange, Ga.

W. B. Sawyer has accepted the position of overseer of carding at the Fidelity Mill, Charlotte, N. C. He was formerly employed at the Jackson Mill, Monroe, N. C.

J. H. Huddleston has accepted the position of overseer of dyeing at the Park Woolen Mills, Rossville, Ga. He was formerly employed at the Carhartt Mills, Rock Hill, S. C.

A. R. Shinn has accepted the position of overseer of weaving at the Osage Mill, Bessemer City, N. C. He was formerly employed at the Kesler Manufacturing Co., Salisbury, N. C.

M. F. Harrington has accepted the position as overseer of spinning at the Kinston Cotton Mills, Kinston, N. C. He was formerly employed at the Wiscassett Mills, Albemarle, N. C.

R. F. Dellinger has succeeded A. O. Norris as overseer of carding at the Cabarrus Cotton Mills, Kannapolis, N. C.

George G. Boone, overseer of weaving at the Osage Mill, Bessemer City, N. C., has resigned.

Otto Anderson, overseer of the duck weaving department at the Boot Mill, Lowell, Mass., has resigned his position with that company.

James Roberts, overseer of weaving at the Garland Woolen Co., Staffordville, Conn., has accepted a similar position with the A. D. Ellis Mill at Orcuttville, Stafford Springs, Conn.

Charles Smith, overseer of carding at the Garland Woolen Co., Staffordville, Conn., has accepted position with the Fabyan Woolen Co. at the same place.

Clarence Fletcher, for a number of years assistant superintendent of the Weybosset Mill, American Woolen Co., Providence, R. I., has been transferred to the position of agent of the Chase Woolen Mill, American Woolen Co. Webster, Mass.

Arthur H. Paul, for a number of years connected with the Boston Manufacturing Co., Waltham, Mass., as bookkeeper and later as superintendent, has been appointed agent of the Waltham Bleachery, Waltham, Mass. He succeeds G. Edward Jordan. Mr. Jordan has been agent of this mill for a number of years and has retired from active mill work.

L. C. Hollingworth, superintendent of the Continental Worsted Co., Providence, R. I., has resigned his position with that company.

Richard J. Hill has accepted the position of superintendent and overseer of finishing at the Continental Worsted Co., Providence, R. I.

Walter E. Holman has been appointed general manager of the Hadley Mill, South Hadley Falls, Mass., to succeed L. A. Anderson, who has resigned.

Robert F. Patterson, for over thirty years connected with the Bigelow Carpet Co. of Clinton, Mass., and for a number of years superintendent of the weaving department, has resigned his position with that company.

H. G. Davenport has accepted the position of overseer of dyeing at the New Castle Knitting Mills, New Castle, Pa. He comes from Cleveland, O.

John Wilson, second hand in the dyeing department at the Weybosset Mill, American Woolen Co., Providence, R. I., has secured the position of overseer of dyeing at the Chase Mill, American Woolen Co., Webster, Mass.

William T. Russell, overseer of weaving at the Berkshire Cotton Manufacturing Co., Adams, Mass., has resigned his position with that company. He had been employed at this company for twenty years and has accepted a similar position with the West Boylston Manufacturing Co., Easthampton, Mass.

John E. Davidson, superintendent of the weaving department at the Thompsonville Carpet Co., Thompsonville, Conn., has been transferred to the Bigelow-Hartford Carpet Co. of Clinton, Mass., as superintendent of the same department.

Everett L. Estes has been appointed superintendent of the Cutler Mill, Warren, R. I., to succeed George S. Collins.

W. E. McArthur, overseer of carding at the W. E. Tilloston Manufacturing Co., Pittsfield, Mass., has resigned his position with that company.

Arthur T. Smith, formerly superintendent of the Langley Mill, Langley, S. C., has resigned to become superintendent of the Nottingham Mill, B. B. & R. Knight Co., Providence, R. I.

Henry Lincoln, of Pontiac, R. I., who has been bookkeeper at the Pontiac Mill, for a number of years, has resigned his position with that company. Mr. Lincoln has been in the employ of the B. B. & R. Knight Co. for fifteen years. He is succeeded by Philip Whaley, who was formerly assistant bookkeeper at the Natick Mill, Natick, R. I.

David A. Provost, overseer of dyeing at the Great Falls Woolen Co., Somersworth, N. H. has resigned his position with that company. He is succeeded by his brother, Philip J. Provost, who comes from Stafford Springs, Conn.

A. J. Van Dominele has accepted the position of overseer of carding at the Blackstone Stocking Co., Central Falls, R. I. He was formerly employed at the Forest Mill, American Woolen Co., Bridgton, Me.

Jerry Splaine has accepted the position of overseer of carding at the Forest Mill, American Woolen Co., Bridgeton, Me. He was formerly employed at the Webster Woolen Mill, Sabattus, Me.

C. C. Wright has secured a position as overseer of carding at Quechee, Vt.

J. H. Gault, of Union, S. C., has been appointed general superintendent of the Richmond Hosiery Mill, with mills at Chattanooga, Tenn., and Rossville, Ga.

W. G. Reynolds has been promoted to general superintendent of the Dresden, Lumberton and Jennings Mills at Lumberton, N. C. G. G. Allen will be superintendent of the Dresden Mills, I. S. McManus has been appointed superintendent of the Lumberton Mill and J. F. Alexander will become superintendent of the Jennings Mill.

J. H. Garrett has accepted a position as overseer of carding at the Profile Mill, Jacksonville, Ala. He was formerly employed at Elizabeth City, N. C.

Luther Lovell has accepted the position of overseer of spinning at the Hannah Pickett Mills, Rockingham, N. C. He comes from McColl, S. C.

D. H. Whitener has accepted the position of overseer of carding at the Capitola Mills, Marshall, N. C.

J. L. Hooker has accepted the position of overseer of spinning at the Avon Mills, Gastonia, N. C.

E. L. Jones has accepted the position of overseer of slashing at the Woodside Mill, Greenville, S. C.

J. C. Reece has been appointed superintendent of the Francis Cotton Mills, Biscoe, N. C.

Hurst Peoples, formerly overseer of the cloth room at the Southside Mills, Winston-Salem, N. C., has accepted a position with the Fulton Bag & Cotton Mills, Atlanta, Ga.

J. R. Turner has accepted the position of overseer of spinning at the Dan River Mills, Schoolfield, Va.

Walter H. Langshaw has announced his intention to resign as president of the Bristol Mill, New Bedford, Mass.

William C. Damon, agent of the Granite Mill, A. L. Sayles & Son, Pascoag, R. I., has tendered his resignation. During Mr. Damon's stay in Pascoag, he has taken an active interest in church and town affairs.

Godfrey Sanderson, formerly assistant superintendent of the Renfrew Manufacturing Co., Adams, Mass., has secured the position of superintendent of the Pilgrim Mill, Fall River, Mass.

F. C. Calvert has been appointed superintendent of the Paton Manufacturing Co., Sherbrooke, P. Q., Canada.

John A. Glassey has been appointed superintendent of the China department of the Suncook Mill, Suncook, N. H., to succeed J. F. Gardner.

George S. Collins, superintendent of the Cutler Mill, Warren, R. I., has severed his connection with that company. He has been in their employ for the past two years.

Frank Hampson has accepted the position of overseer of carding at the Baltic Mills Co., Baltic, Conn., to succeed the late Benjamin Sprowson.

J. Colby Lewis, Jr., who recently accepted the position of overseer of carding at the Lockwood Co., Waterville, Me., was formerly at the Stark Mill, Manchester, N. H., for a number of years and at the Great Falls Woolen Co., Manchester, N. H.

Paul Graefe has accepted the position of assistant superintendent for W. J. Dickey & Sons, Oella, Md.

Frank Judson has accepted the position of overseer of finishing at the Ray Mill, American Woolen Co., Franklin, Mass. He was formerly employed at the Darling Woolen Mill Co. at Holliston, Mass.

T. F. Crocker has accepted the position of overseer of carding at the Swansdown Knitting Co. at Hudson, N. Y. He comes from Fitchville, Conn.

John G. Rishton, overseer of carding at the Blackstone Stocking Co., Central Falls, R. I., has resigned his position with that company.

John F. Campbell, overseer of finishing at the National & Providence Mill, American Woolen Co., Providence, R. I., has resigned his position with that company. He is succeeded by John J. Lenahan, who formerly held this position.

J. H. Prescott, formerly of the Kingston Hosiery Co. of Kingston, Ont., Canada, and later of the Allentown Eiderdown Co. of Allentown, Pa., has accepted a position as foreman of knitting at the Cheltenham Knitting Co. of Germantown, Pa.

Patrick Carroll has been appointed overseer of carding in the woolen department of the W. E. Tillotson Manufacturing Co., Pittsfield, Mass.

M. Armitage, in charge of the No. 1 weaving department at the Bigelow Carpet Co., Clinton, Mass., has resigned his position with that company. He is succeeded by James H. Strang, who was second hand at the mill. A. E. Wilman, assistant superintendent of weaving for over two years, has tendered his resignation.

George E. Bidwell, overseer of finishing at the Devonshire Mills, Goff's Falls, N. H., has severed his connection with that company.

L. L. Britt has accepted the position of assistant superintendent at the Dillon Cotton Mills, Dillon, S. C. He was formerly employed at the Bellwill Mill, Wilmington, N. C.

E. H. Buckner has accepted a position as overseer at the Atlas Mill, Huntsville, Ala. He was formerly employed at the Abingdon Mill, at the same place.

O. E. Wilson has accepted the position of overseer of carding at the Manetta Mills, Lando, S. C. He was formerly employed at the Social Circle Cotton Mill, Social Circle, Ga.

E. P. Lee has accepted the position of assistant superintendent at the Dillon Mill, Hamer, S. C.

B. F. Fairchild has accepted the position of master mechanic at the Dillon Mill, Hamer, S. C.

Paul Gifford has been appointed superintendent of the Interlaken Mill, Quinebaug, Conn., to succeed Frank Creighton.

J. Frank Gardner, who has been superintendent of the China Mill, Suncook, N. H., which is owned and operated by the Suncook Mill, has resigned his position with that company to become superintendent of the Quinebaug Co. of Danielson, Conn., under agent J. Herbert Smith.

Harold E. Wadely, agent of the Bigelow Carpet Co., Lowell, Mass., who had been employed for this company for the past three years, has resigned his position with that company. He is succeeded by W. Lyford, who is a son-in-law of A. D. Higgins, vice-president of the company.

James H. Barlow, superintendent of the weaving department at the Stevens Manufacturing Co., Fall River, Mass., has resigned his position with that company to accept the position of assistant superintendent at the Bates Manufacturing Co., Lewiston, Me.

Frank A. Brady, for many years overseer of the finishing department at the Stevens Manufacturing Co., Fall River, Mass., has been appointed manufacturing superintendent at this company.

Eben C. Willey, agent of the Pilgrim Mills, Fall River, Mass., and Arthur C. Homer, treasurer of this company, have severed their connections with this company. H. S. Searles, of Cohoes, N. Y., has been appointed treasurer.

William Battye has accepted the position of assistant superintendent and designer at the Merrimack Woolen Co., Lowell, Mass. He was formerly employed as designer at the Linn Woolen Co., Hartland, Me.

John P. McDonald has accepted the position of overseer of carding at the Glengarry Mill, Inc., Oakland, R. I. He comes from Oswego, N. Y.

Frank Miller, overseer of the spinning department at the Laconia division of the Pepperell Manufacturing Co., Biddeford, Me., has resigned his position with that company.

Leonard Junier has accepted the position of overseer of carding at the Empire Cotton Mills, Welland, Ont., Canada.

Peter Lynch, overseer of weaving at the Stillwater Worsted Co., Harrisville, R. I., has resigned his position with that company.

Edward Burrows, overseer of the bleaching department at the Southbridge Printing Co., Southbridge, Mass., has resigned his position. He is succeeded by John Keenan. Mr. Burrows had been employed for that company for the past twelve years, four years of that time as overseer.

J. Jackson, of Chicopee Falls, Mass., has been appointed overseer of the dressing department at the China Mill, Suncook, N. H.

George H. Alsdorf has been appointed superintendent of the weaving department at the No. 1 Mill of the Stevens Manufacturing Co., Fall River, Mass., and Henry Baer has accepted a similar position at the No. 2 and 3 Mills. These men had charge of the weaving at these mills. Adolph Johnson, who was second hand in the weaving department at the No. 1 Mill, has been made overseer of the entire weaving department.

August Wolfe has been appointed overseer of spinning at the Worumbo Manufacturing Co., Lisbon Falls, Me. He had been second hand in the spinning department for a number of years and succeeds the late William Parkin. Everett I. Blethen has been appointed second hand in the spinning department. He also has been employed a number of years for this company.

Martin Hogan, overseer of spinning, spooling and warping for the past three years at the Nightingale-Morse Mills, Inc., Putnam, Conn., has resigned his position with that company. The employers, overseers and friends in the mill presented him with a handsome pocket book containing a sum of money. He has secured a position with the Manhasset Mill of the same city.

H. N. Howard, who has been secretary and treasurer of the Dixie Cotton Mill of Mooresville, N. C., since its organization, has resigned.

William Warmack has been elected president of the Yazoo Yarn Mill, Yazoo City, Miss.

J. S. Carlton has been appointed superintendent of the Ida Yarn Mill, Laurel Hill, S. C.

J. H. Gardner has accepted the position of overseer of spinning at the Dan River Mill No. 4, Danville, Va.

D. G. Day has accepted the position of overseer of the cloth room at the Stonewall Cotton Mills, Stonewall, Miss., to succeed C. T. Fallin.

R. S. Steele has accepted the position of assistant to the secretary and treasurer of the LaFayette Cotton Mills, LaFayette, Ga.

R. B. Hunt, overseer of spinning and twisting at the LaGrange Mill, LaGrange, Ga., has resigned.

Archie West has been appointed designer at the Locke Cotton Mills Co., Concord, N. C.

C. S. Pitts has accepted the position of overseer of carding at the Arista Cotton Mills, Salem, N. C.

L. A. Trippe, formerly overseer of weaving at the Gaffney Manufacturing Co., Gaffney, S. C., has been appointed superintendent of the Gainesville Mill, Gainesville, Ga.

S. R. Power has accepted the position of overseer of weaving at the Gaffney Manufacturing Co., Gaffney, S. C.

B. F. Barnes, Jr., has accepted the position of overseer of carding and spinning at the Echota Cotton Mill, Calhoun, Ga. He was formerly employed at the Fulton Bag & Cotton Mills, Atlanta, Ga.

DEATHS.

Lawrence F. Kilty, one of the leading business men of North Oxford, Mass., died at his home in Oxford, Mass., at the age of 66 years. Mr. Kilty was agent of the Thayer Woolen Co. of North Oxford and had been employed fifty-five years for that company. He started in as bobbin boy, gradually working up until he became agent of the company. He was born in Burrillville, R. I., and is survived by a wife and a daughter.

Thomas Galbraith, a retired carpet manufacturer of Philadelphia, Pa., died at the Samaritan Hospital in that city, at the age of 80 years. Mr. Galbraith had enjoyed the best of health until a few weeks ago when he was taken suddenly ill. He retired from active business twenty years ago and is survived by his wife, one son and a daughter.

Edwin Jay Nelson, who conducted a knit goods manufacturing establishment at Middleville, N. Y., some years ago, died at his home in Utica, N. Y., at the age of 59 years. He is survived by a widow.

Charles C. Burnham, president of the Easton & Burnham Machine Co., manufacturers of spindles at Pawtucket, R. I., died at his home in that city after a short illness at the age of 88 years. His wife, three sons and a daughter survive him.

Daniel A. Tompkins, of Charlotte, N. C., died at his summer home in Montreal, N. C., on October 18. He had been in poor health for a number of years and the end came as a result of a general breakdown. Mr. Tompkins was born in Edgefield, S. C., on October 12, 1852. He was graduated from the South Carolina College and received his degree as engineer at Rensselaer Polytechnic Institute, Troy, N. Y. He learned the machinist trade and worked for ten years at the Bethlehem Iron Works, Bethlehem, Pa., as machinist, draftsman and assistant to the master machinist. Mr. Tompkins was master machinist of the Crystal Plate Glass Works and Crystal Railway Co., Crystal City, Mo., from 1880 to 1882 and had charge of the construction of a large addition to that plant. Since 1882 he has made his home at Charlotte, N. C., where he was interested in many enterprises throughout the South, including cotton mills, cotton seed oil mills, refineries, electrical and phosphate works. In 1892 he purchased the Charlotte Observer and under his management it has developed into one of the leading newspapers in that section of the country. Mr. Tompkins was the author of a number of valuable books including "Cotton Mill, Process and Calculation," "Cotton Mill Commercial Features," "Cotton and Cotton Oil," "American Commerce, Its Expansion," "Cotton Values in Textile Fabrics," "History of Mecklenburg County, North Carolina." President McKinley appointed him a member of the Industrial Commission where he rendered service of a high order. No one could make Mr. Tompkins' acquaintance without being impressed by his ability, honesty, integrity and independence. He was a close student of the many questions to which he gave his attention and never discussed a subject in private or public without contributing to a better understanding of it by his hearers. By his death the country and particularly the textile trade suffer a serious loss.

Joseph Dews, who formerly operated the Phoenix Woolen Mill at East Greenwich, R. I., died September 29. He was born in Dewsbury, Eng., and was 72 years of age. Mr. Dews was actively connected with the Phoenix Mill several years ago and owned and operated this plant. Three daughters survive him.

Thomas Henshall, one of the leading silk manufacturers of Paterson, N. J., died at his home in Bridgewood, following an operation. He was in his sixty-third year and was born in England. In 1878 he came to America and opened a mill in Paterson. Afterward he entered into partnership with Alfred Crew, but later withdrew and erected an independent plant. Mr. Henshall was a member of the Masons, Elks and Knight Templars, also the Paterson Silk Manufacturers' Association. His wife and five daughters survive him.

Peter Scott, one of the most capable woolen mill managers, who was employed at the Paton Manufacturing Co., Sherbrooke, P. Q., Canada and with Caldwell, Boyd & Co., Lanark, Ont., Canada, died at Ottawa, Ont., in his seventy-sixth year. Mr. Scott had been living in retirement for the past five years. He was born in Scotland and came to Canada over forty years ago. He was recognized as one of the leading managers of woolen mills in that section. Mr. Scott is survived by two sons, Walter Scott, overseer of finishing at the Allen Woolen Mill, Rochester, N. Y., Wm. Scott of Springfield, Mass., and seven daughters.

Frederick C. Seemann, a silk manufacturer, who operated a large plant at Union Hill, N. J., died at his home in Thompkinsville, in his fifty-ninth year. Mr. Seemann was a director of the State Island Savings Bank.

Richard J. Hill, who has been overseer of finishing at the Dunn Worsted Mill, Woonsocket, R. I., for a number of years, has resigned his position with that company to accept a position as superintendent of finishing in a mill making similar goods in Rhode Island.

Jacob Kaef, for a number of years foreman of the picking department at the Adelaide Silk Mill, Allentown, Pa., died suddenly of heart trouble. He is survived by a wife and five children.

Charles L. Prescott died at his home in Tilton, N. H., at the age of 76 years. He was for many years overseer at the Amoskeag Manufacturing Co. at Manchester, N. H.

Edward Hilton, a resident of Woonsocket, R. I., died at his home in that city. He was born at Cheshire, Eng., on Nov. 18, 1836. For a number of years he was overseer of the mule spinning department at the Globe Mill, Manville Co., Woonsocket, R. I.

H. Nelson Favor, for thirty years a resident of Hillsboro, N. H., died at his home at the age of 68 years. For a number of years Mr. Favor was overseer in the hosiery mill of the Contoocook Co. His widow, one son and a daughter survive him.

J. Thatcher Emery, for a number of years overseer of carding at the Pepperell Manufacturing Co. at Biddeford, Me., died suddenly at his home in that city on October 5, shortly after he had finished work at the mill for the day. Mr. Emery was 55 years of age and suffered a slight paralytic shock some time ago but had resumed work at the mill on Monday morning. He was born in Saco, Me., and was the son of the late George F. and Lucy Thatcher Emery. His wife, one daughter and a son survive him.

Max H. Strauss, president of the Long Island Knitting Mills Co., Brooklyn, N. Y., pioneer knit goods manufacturer, died suddenly of heart disease at the age of 53 years. He is survived by his wife, two sons and two daughters.

Albert D. Miller, for a number of years superintendent of the silk mill operated by Givernaud Bros., at Hackensack, N. J., died of cancer in the throat, at his home in that city at the age of 59 years. He is survived by his wife, two sons and two daughters.

William Weiss, senior member of the firm of William Weiss & Co., silk commission merchants of New York City, died of pneumonia on October 25, at his home in Yonkers, N. Y. He was 75 years of age and is survived by three sons and two daughters.

Horace A. Babbitt, 90 years of age, one of the oldest residents of Adams, Mass., and formerly a prominent mill superintendent, died at his home in that city on October 24. His health had been unusually good until a few months ago. When a young man, Mr. Babbitt learned the knitting business in Hoosick, N. Y., and later became superintendent of a knitting mill in Cohoes and Philmont, N. Y. He retired from active mill life about twelve years ago and took up his home in Adams. He is survived by his wife, one son and a daughter.

John E. Sayles died at his home in Uxbridge, Mass., October 28, at the age of 59 years. Mr. Sayles was a life long resident of Uxbridge. He had graduated from the public schools in that town and later went to Wilbraham Academy. After finishing school, he entered the carding department of the Rivulet Mill, which was operated by his father, the late Richard Sayles. After the death of his father, a company was organized under the name of Richard Sayles Co., with John E., Herbert and Andrew Sayles forming the company. John E. Sayles acted as superintendent and agent. Mr. Sayles was a member of Solomons Temple Lodge, A. F. & A. M. He is survived by his wife.

Charles C. Buffinton, member of the firm of George H. Hawes & Co., one of the oldest cloth brokers in the United States, died at his home in Fall River, Mass., at the age of 63 years. He was one of the original charter members of Company M. V. M. of Fall River and served as a corporal for several years. Mr. Buffinton was a member of the Common Council in 1882 and 1887. He was a highly respected citizen and a regular attendant of the First Congregational Church.

New Publications

Any work noticed under this heading can be obtained, postage or express charges free, by sending the price listed to Lord & Nagle Company, 144 Congress St., Boston, Mass. A catalogue of textile books in the English language will be sent free on application.

Linen, From the Raw Material to the Finished Product; by Alfred S. Moore; 132 pages, 4 1/2 by 7; Isaac Pitman & Sons, 2 W. 45th St., New York. Price 75 cents.

This is the latest volume in the series of Pitman's Common Commodities of Commerce. It deals with the production of the raw material manufactured into yarn and cloth, with the commerce in linen products, the contents being arranged under the following heads: Linen in History, Foundations of Irish Linen Trade; The Irish Linen Boards; Irish Linen Trade As It Is; The Raw Materials; Preparing the Flax; The Spinning Mill; Winding, Warping and Weaving; Bleaching and Finishing; Varieties of Linen; Grading of Linen; Making up and Marketing; Conditions of Work; Combination and Wages. It is a very useful handbook for not only the general student, but also for those engaged in linen manufacture and trade.

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Scientific Management, edited by Clarence B. Thompson, LL.B., A.M., lecturer on manufacturing in Harvard University; 859 pages, 6 by 9; Harvard University Press, Cambridge, Mass. Price $4.

This volume is something novel in the literature of scientific management, being a compilation of articles on the subject by experts who have discussed it during the last few years. Following is a list of the articles included in the work: The Literature of Scientific Management, by C. B. Thompson; Unsystematized, Systematized and Scientific Management, by H. P. Kendall; The Science of Management, by Lieut. G. J. Myers; The Present State of the Art of Industrial Management; Management Principles and the Consulting Engineer, by Charles Day; A History of the Introduction of a System of Shop Management, by James M. Dodge; An Object Lesson in Efficiency, by Wilfred Lewis; On the Art of Cutting Metals, by F. W. Taylor; The Spirit in Which Scientific Management Should be Approached, by James M. Dodge; The Successful Operation of a System of Scientific Management, by Lieut. F. W. Sterling; The Planning Department, by H. K. Hathaway; Slide Rules for the Machine Shop, by C. G. Barth; A Graphical Daily Balance in Manufacture, by H. L. Gantt; The Tool Room Under Scientific Management, by R. T. Kent; Classification and Symbolization, by C. B. Thompson; Scientific Management in Retailing, by C. B. Thompson; Scientific Management and the Wage-Earner, by F. T. Carlton; Bibliography of Scientific Management, by C. B. Thompson. Several articles in criticism of the methods and theories of efficiency men are included in the list. This side of the question, however, might profitably have been accorded more space, but the shortcoming is doubtless due to the lack of material, as the discussion of scientific management has up to the present time been carried on mainly by its exponents.

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The Sheep and Wool Industry of Australia, by Henry B. Smith; 180 pages, 5 1/2 by 8 1/2; Whitcombe & Tombs, 189 Little Collins St., Melbourne, Australia.

This book has been written for the sheep farmers and wool classers of Australia, but it is a valuable handbook for not only the wool growers, but for wool dealers and manufacturers in all countries. Beginning with a historical sketch of the Australian sheep industry, the contents are arranged under the following heads: Australian Sheep Industry, Sheep and Localities, English Sheep, Sheep Selection, Fat Lambs, Shearing, Wool, Moisture in Wool, Wool-Sorting, Manufacturing, Textile Fibers, Wool-Classing, Pressing the Clip, Wool-Scouring, Wool-Selling, Wool Buying, Fellmongering, Sheep Skins, Farmers' Produce, Killing, Skinning and Dressing a Sheep, Terms and Means. Many excellent illustrations add to the value of the book.

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The Cost of Power; by G. B. Gould and C. W. Hubbard; 124 pages, 4 1/2 by 6 1/2; The Fuel Engineering Co., New York. Price $2.

This book was written for private distribution among a comparatively small number of manufacturers and was designed to meet the requirements of power users who have not had an opportunity to make a technical study of the problem. It is now offered for sale and will be found a valuable handbook by all who use power. It is freely illustrated and the table of contents and index facilitate its reference to any subject.

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The Protective Tariff Cyclopedia; published by the American Protective Tariff League; 160 pages, 5 1/2 by 9. Price $1.

This book consists of an alphabetical list of articles on the dutiable and free list with the Payne and Underwood rates in adjacent columns. In addition there is a speech on the effect of free wool agitation and policy, by Congressman Frank W. Mondell, of Wyoming, in the House of Representatives on August 26, 1914.

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Hendricks' Commercial Register of the United States; S. E. Hendricks Co., Inc., 2 West 13th St., New York. Price $10.

The twenty-third annual edition of Hendricks Commercial Register of the United States for buyers and sellers has just been issued. It is the most complete edition of this useful work that has been published. New features have been added; thousands of trade names and titles of identification have been inserted. "The Assistant Buyer," formerly published by the Sullivan System, has been incorporated with it, and the entire work has been revised in every detail. This publication is a standard reference work of the trades and indus-

tries of the country. It numbers some 1,600 pages and contains about 350,000 names and addresses, with upwards of 45,000 business classifications; 138 pages are required to index its contents. Hendricks' Commercial Register has been in existence nearly a quarter century. It is used extensively throughout the United States and many foreign countries for purchasing purposes by corporations, governments, associations, manufacturers, exporters, purchasing agents and sales managers.

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BUSINESS LITERATURE

Fundamentals of Tire Construction; Goodyear Tire & Rubber Co., Akron, Ohio.

This booklet is published by the manufacturers of Goodyear Tires. It is free from dry technicalities and describes with interesting detail and many illustrations the process of manufacture of rubber tires from the crude rubber stage to the finished product. As cotton fabrics form an important feature in a modern automobile tire, cotton mill men will be interested not only as automobilists, but also as manufacturers in getting a copy of this interesting booklet.

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Mechanical Rubber Goods; The Goodyear Tire & Rubber Co., Akron, Ohio.

The Goodyear Tire & Rubber Co. have published a comprehensive illustrated catalog, describing in a readable way and illustrating profusely some of the mechanical products for manufacturers' use. One of the most important is the Goodyear and Goodyear Balata belting. The Balata belting has taken a high place for power transmission in the last few years. Their rubber belting is made in various brands for different uses and is particularly adapted for dyehouses and bleacheries where there is moisture. Conveyor belting is another specialty. The most desirable feature of this belting is flexibility without stretch. Flexible metallic hose for steam purposes is made in a variety of styles with the suggestive name "Kantkink" for a trademark. Air hose and ordinary fire hose are manufactured to meet the specifications required for the most severe use. The variety of hose that they make is surprising. Rubber packing, both sheet and piston packing, is one of their widely used specialties. Rubber tiling and mats have come to be an important branch of their work and Goodyear Interlocking Rubber Tiling is a compound which is claimed to outlast marble.

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The Graton & Knight Mfg. Co., Worcester, have recently sent to their customers and prospective customers an unusual piece of business literature in the form of a "Harvest Letter." It is a splendid example of a good idea carried out with excellent taste. It radiates sunshine both in the tone of the text matter and the effect of the illustrations and printed matter and carries the conviction that the underlying sentiment inspiring it is a cordial desire to do business on a service basis and maintain the good-will and friendship of the trade.

Industrial Notes

FRAUDULENT SUBSCRIPTION AGENT

A man calling himself Purdy has in an instance which has come to our attention in a Rhode Island city represented that he was authorized to take subscriptions for the Textile World Record in combination with other magazines at a ridiculously low price, and did collect money for a renewed subscription. We never received it. The man is not known to us and has no authority to represent the Textile World Record or collect money in its behalf. He is described as being about 5 feet 11 inches tall, about 21 years of age, dark complexioned, dresses well, wears tortoise shell eye glasses. He says that he is selling subscriptions to get a scholarship in Dartmouth College.

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WARPING AND WINDING

Alexander Smith & Sons have moved into their new mill at the corner of Centre and Glendale Sts., Easton, Pa., which is planned especially for their business and so laid out that the work will go through speedily and with the greatest efficiency. Their new quarters enable them to double their capacity for warping and winding on commission. Their work is done on frames with Swiss motion. The goods are fully insured while in their possession. They make a specialty of raw silk warping but are prepared to handle any work in this line.

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CALENDARS

Among the first calendars for the year 1915 received is one which Walter W. Hodgson, 315 W. Lehigh Ave., Philadelphia, is distributing to the trade upon application. Mr. Hodgson is engaged in card stamping and repeating for all classes of jacquard weaving and this calendar, which is really a work of art entitled "Sweet Innocence," is a reproduction of a picture which has found favor in some of the art galleries throughout the country, and can be obtained on application.

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NEW BEDFORD TEXTILE SCHOOL

Morris H. Crompton, who was recently appointed assistant evening instuctor in machine shop practice at the New Bedford Textile School, has been made permanent day and evening instructor in that department to succeed the late Thomas E. Whitford. Arthur L. Simmons takes Mr. Crompton's place as assistant evening instructor. Both Mr. Crompton and Mr. Simmons have had extensive experience in machine shop work, having been connected with the Morse Twist Drill and Machine Co. of New Bedford and with other concerns.

ACTIVITY IN THE LEEDS WOOL INDUSTRIES

Prepared by Mr. J. F. Smith at the request of Consul Homer M. Byington, Leeds, England, September 23.

The demands for clothing for the armies and for the numerous recruits have assumed a magnitude in excess of the immediate supplies. Inquiries came with a rush from the British and French Governments for khaki and blue gray cloth of the usual standards, but such goods were not to be found in stock, since they have no other markets. The British authorities were informed by the Leeds Chamber of Commerce that it would be necessary to relax their restrictions in order to obtain the quantities required, and the advice was accepted.

It was decided that the first outfits of the recruits should be in blue serge, and the lord mayor of Bradford was instructed to obtain 15,000 pieces for quick delivery. There was, probably, more stock of that type of cloth in suitable weight than any other. As regards the dyes, there was little time for question; and indigo, alizarine, and aniline may all have served the purpose in such emergency. That, however, was not a serious matter, since blue uniforms are only intended to be the temporary outfit of the recruits, while those who are sent to the front must be clothed in Khaki.

Although a term common in the East, khaki signifies dirt. It was the popular color of the Boers during the South African war, and rendered their movements invisible at a distance. It was adopted by the British Government as the fighting uniform of their troops; and, briefly, it may be described as an olive shade of color with a green tint. If dyed in the wool, it is a compound mixture of several shades; if dyed in the piece, it is still a compound of material to render the same effect.

In times of peace, the Government places orders intermittently, and regular work for the manufacturers thereof is not assured; consequently, only a few firms cater for that class of business. Khaki finds no sale in the open market, hence the absence of stocks in an emergency caused by the sudden outbreak of war.

These standard khaki cloths are described as "serge drab mixtures," composed of worsted warps and woolen wefts. The 20-ounce suitings are of two-fold 24s worsted warps, Bradford counts. The wefts are woolen, spun 13 yards per dram. The warps have 40 ends per inch, the wefts 42 picks per inch, and the cloth is finished 56 inches wide, in Melton; and the weave is an ordinary twill. Great strength and durability are required, similar to the whipcord tweeds produced in the west of England, and termed "livery tweeds."

The wear and tear of an army in conflict is great, as well as the waste, and provision for the same became urgent at the end of August. The Leeds Chamber of Commerce used its influence with the War Office to get the orders more widely distributed and the conditions relaxed, and the scarcity of dyestuffs seconded those efforts strongly. The results of the wider distribution placed many firms on full time and night work, where short time and trade depression previously ruled. By the middle of September there was not only the regular army to clothe, but half a million recruits. The Leeds consular district became as busy as a beehive, because it is the chief center of woolen-cloth production for the army, navy, and police forces of Great Britain. In addition to the weaving factories, the wholesale clothing and tailoring factories in Leeds find employment for 40,000 workers. Thus, Leeds and district have the double advantage of weaving the cloth and making the garments, and they have secured a big share of the Government orders.

Under the previous state of trade depression prices of crossbred wool of suitable quality—40s, 46 and 50s, Bradford counts—had been drooping, but suddenly became firm again. By the middle of September such wools of short staple, suitable for the woolen manufacturers, were all bought up and the market cleared, according to one firm, which had found difficulty in obtaining the wool for its share of the khaki orders. That, however, did not trouble it, since there is now obtainable the longest crossbred wool reduced to suitable length for woolen carding and spinning by the new invention—Smith and Hall's patent machine.

The increasing supplies of crossbred wool of long fiber and the decreasing supplies of fine merino wool have been repeatedly pointed out by eminent wool men and wool manufacturers. There is a market for mutton, both fresh killed and that imported from New Zealand and Argentina; and the raising of such sheep as will supply the markets for mutton is now the first consideration of the flock owners. New Zealand and Argentina have been enriched, to the detriment of their wool, and British wool interests have now too much crossbred and too little merino wool.

The length of fiber of such crossbred wool from the mutton sheep—6 to 12 inches—has been the manufacturers' stumbling block. Now, however, their attention is compelled by the requirements of the army, and its successful application to military purposes will no doubt pave the way for its extended use. It is a point worthy the attention of the American wool manufacturers, whose domestic wools are largely of the long-fiber class.

101 PER CENT. VACUUM

Within recent years engineers have been striving for higher and higher vacuums, but it is only recently that the feat of obtaining a vacuum 1 per cent. higher than the theoretical has been accomplished. A recent test made in the Hydraulic Laboratory of the Wheeler Condenser & Engineering Co., Carteret, N. J., on one of their Turbo air pumps, showed vacuums considerably higher than the theoretical for quantities of air up to about 20 cubic feet of free air per minute when the vacuum fell to the 100 per cent. or the theoretical. An explanation advanced by their Engineering Dept. is that the hurling water passing through the pump is subjected to a cooling effect caused by the high vacuum and this reduces the temperature of the water, also reduces the vapor tension and increases the vacuum obtainable.

WALTER B. SNOW

Walter B. Snow, publicity engineer, announces the removal of his offices to Rooms 511-516 in the new Federal St. Bldg., 136 Federal St., Boston. Mass.

HESS-BRIGHT PATENT SUSTAINED

The United States Circuit Court of Appeals handed down on September 17th, 1914, decision sustaining the basic Conrad patent of the Hess-Bright Mfg. Co. as the result of its long action against F. & S. for infringement. This suit involved only one patent covering the article and not the one relating to a method. Copy of the decision in full will be forwarded upon request.

The Hess-Bright Mfg. Co. reports that they are now receiving large quantities of D. W. F. bearings from Berlin, which in connection with their large stock on hand when war was declared and the increase of their facilities in Philadelphia for manufacture, enables them to give users of ball bearings excellent service.

CHANGES IN THE SCOTCH TWEED INDUSTRY

Consul Rufus Fleming, Edinburgh, Scotland, Sept. 24

As a result of the European war it is expected that important changes will be made in the tweed industry in South Scotland. Germany and Austria have long been the best foreign markets for Scotch cloth. These markets were obtained and held by manufacturers and merchants on the long-credit system, credits to wholesale tailoring establishments running from 12 to 18 months' account. In consequence of the war not only has this trade ceased altogether, of course, but large losses on accounts also will be sustained.

It is now felt that the time has come for the adoption of a shorter credit system in woolen manufacture, corresponding somewhat to credits in the wool market and yarn market. Wool is sold on 14 days' credit, while yarn spinners usually allow two months. There is a movement among manufacturers and traders toward coordinating the industry with other lines of production. This is encouraged by the action of the British Government, which has been placing orders for khaki with the Scotch mills and offering to pay cash when the goods are passed, which will mean cash within something like a month. It should be noted also that the Government is buying the goods at net measure. An anomaly long ago crept into tweed trade that does not obtain in any other textile industry—the manufacturer has been giving 38 inches to the yard. The Government, however, is now buying and paying for khaki at 36 inches to the yard. This may lead the mill owners to return to the methods of other textile manufacturers, and it is expected to mark a permanent change in the industry.

It is especially noteworthy that prominent woolen cloth concerns which have never before considered the "ready-made" trade are entertaining a suggestion that a syndicate be formed to undertake this branch of manufacture. Some small firms have engaged in the production of clothing with much success. Orders from the British Government and prospective orders from France have induced the larger mill owners to think seriously of the tailoring branch of the business in connection with cloth manufacture, thus carrying on the trade completely from the wool to the wearer. It is claimed that suits can be produced to sell at $11 retail. It is said that a good 18-ounce cheviot cloth can be made, all wool, at $1 a yard when orders are in bulk. The average cost at the factory of making a suit may be taken as $2.45. This leaves about $5.05 for marketing.

There is a probability that the "ready-made" trade will develop rapidly under the impetus which Government orders have given and that this branch of manufacture will become an important feature of the Scotch woolen industry. This opinion is strengthened not a little by the fact that for several years the sales of ready-to-wear suits have been steadily increasing. A fair proportion of men's suits sold in this market are now made in America of Scotch cloth. The style, finish, fine appearance, and wearing quality of the clothing have popularized ready-made articles, even breaking down the prejudice of many men who have heretofore looked at nothing not made to measure. As new conditions are requiring the most careful economy, the time seems auspicious for the development of the wholesale tailoring industry.

AUSTRALIAN WOOL SALES

Perhaps the best idea that can be given of the absolute dependence of Australian woolgrowers on the countries likely to be involved in the war is a table showing the purchases of wool in the Commonwealth during the last two seasons. The buying has been as follows:

Countries	1912-13 Bales	1913-14 Bales
United Kingdom	414,267	318,661
Germany	345,512	425,275
France, Belgium and Holland	557,647	669,022
Austria, Italy and Switzerland	76,872	75,426
United States and Canada	19,929	90,205
Russia, Norway and Sweden	10,473	14,819

It will be seen by the foregoing that Austria and Russia play but a minor part so far as the purchase of wool in the Australian markets is concerned. The greatest buyers and consumers are France, Germany and the United Kingdom. The United States has been no mean factor in forcing values during the past six months, but then it has been in competition with the home and Continental buyers, as well as with Australian mills.—Sydney Herald.

NORTH CAROLINA TEXTILE SCHOOL

The textile department of the North Carolina College of Agriculture and Mechanic Arts, West Raleigh, N. C., are at present erecting fly frames and drawing frames from the Woonsocket Machine & Press Co.; drawing and spinning frames and looms from the Whitin Machine Works; looms from the Stafford Co., and machinery from other firms.

INCREASED DEMAND FOR MOTOR TRUCKS

"The demand for motor trucks increases in ratio with the widening knowledge of their possibilities," says President George A. Kissel of the KisselKar. "And," he added, "I expect the greatest forward stride in this branch of automobile industry to take place within the next year or two.

"The only item of cost in which the average first class motor truck exceeds its capacity equivalent in horse-drawn equipment, is the original purchase price and that is slight. But many business men, who did not formerly look beynd that, now understand the great vital question, namely the time and money cost per mile of operation.

"They realize now that the perfected truck of today will double, and sometimes quadruple the mileage of horses capable of hauling the same burden, that it will work twenty-four hours as against the horses six or seven, that it lends itself to an expanding business, that it travels faster and therefore gives more satisfactory service to customers.

"Many lines of business are now completely convinced that motor trucks are indispensable to the economical haulage of their product. In the building trades, construction work, road building, general haulage for hire, wholesale supplies of all kinds, municipal work, and a lot of other lines where time and tireless service count, the motor truck is absolute, and no one tries to argue otherwise."

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NEW BEDFORD TEXTILE SCHOOL

Principally as a result of increased enrollment in certain departments and on account of the resignation of instructors in the evening classes, new assistant instructors have been added to the teaching staff of the New Bedford Textile School. Raymond A. Burt, a graduate of the school, has been elected assistant instructor in chemistry and dyeing to teach both the day and evening classes. John M. Palmer, who received a diploma last year for work in the evening classes, is also to assist in teaching chemistry and dyeing in the evening, taking the place of Elton R. Darling, who will not be in the city.

John F. Hagen will teach mill calculations in place of Sidney S. Paine who has resigned. H. D. Ricketson will have a class in arithmetic, a large number having applied for that subject. Morris Crompton is the new assistant in the machine shop and George Southworth in plain loom fixing. Harold Perkins, who has been practice instructor, is now to be also lecture instructor of the evening classes on cotton classing in place of Edward W. Baylies, who has resigned.

Most of the new equipment which has been secured for the machine shop has been installed, and thereby it will be possible for the school to accommodate twice the number of students in that department. In the past the management has been obliged to reject many who wanted to enroll as students in the courses in shop practice. The school has entered upon its new year with a gratifying enrollment in both the day and evening classes. Prospects are that there will be a total enrollment during the year of at least 1,000.

The school has recently received a new spinning frame from the Fales and Jenks Machine Company, specially constructed for tests as to the comparative qualities of spinning rolls, spindle speeds, and other disputed points in spinning practice.

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TREASURY DECISIONS

T. D. 34797. September 30, 1914. Drawback on automobile tops. Drawback on automobile tops manufactured by the American Top Co. with the use of various imported materials.

T. D. 34812. October 7, 1914. Drawback on cords and loops. T. D. 34365 of April 9, 1914, extended to cover additional cords and loops manufactured by Bernhard Ulmann & Co., of New York, with the use of dyed imported artificial silk yarn.

T. D. 34814. October 8, 1914. Drawback on velvets and plushes. Drawback on velvets and plushes manufactured by the Salt's Textile Manufacturing Co., with the use of imported yarns.

T. D. 34818. October 7, 1914. Plain woven fabrics. 1. Crash or toweling composed of flax, or of flax and cotton, of which flax is the component material of chief value, woven on a plain loom, having no extra attachments and using but two heddles, but having the threads so manipulated that in the border two small colored threads are inserted in the space taken up by one thread in the body of the fabric, are "plain woven fabrics," and are properly dutiable under paragraph 283, tariff act of 1913, and not as "manufactures of flax" under paragraph 284.

2. Customs Practice. Where it has been the practice of customs officers to classify a particular kind of fabric as "plain woven" for several years prior to the enactment of the tariff law, and the paragraph of the previous act covering the enumeration is reenacted without changing the language relating to such merchandise, it will be presumed that Congress adopted this customs practice and intended that the term should cover the same class of goods in the subsequent act.

3. Commercial Designation. The term "plain woven fabrics" is not a term used in buying and selling goods, but the testimony shows that it is a commercial term understood in the trade as including a variety of fabrics dealt in under specific names; Held, That the merchandise in question is commercially known as a "plain woven fabric." In the matter of protects 730411, etc., of Douglas & Berry et al, against the assessment of duty by the collector of customs at the port of New York.

T. D. 34819. October 7, 1914. Cotton towels woven on jacquard looms.

1. Specific Provision. Towels made of cotton and woven on jacquard looms, being more specifically provided for as "towels . . . made of cotton . . . and not otherwise provided for" than as "all other jacquard figured manufactures of cotton," are dutiable under paragraph 264, tariff act of 1913, and not under paragraph 258.

2. Statutory Construction—General Terms. All laws should be interpreted so as to give a sen-

sible construction. General terms should be so limited in their application as not to lead to an absurd or ridiculous result. In the matter of protest 734928 of M. Gardner & Co. against the assessment of duty by the collector of customs at the port of New York.

T. D. 34820. October 9, 1914. Straw rugs Woven rugs in which cotton thread or cord is used in the warp, and a cord made of twisted straw in the weft are dutiable as "mats and rugs manufactured from straw, round or split," under paragraph 272, act of 1913, and not as "mats and rugs made of vegetable fiber" under paragraph 273. In the matter of protest 730923 of Hibben, Hollweg & Co., against the assessment of duty by the collector of customs at the port of Indianapolis.

T. D. 34823. October 9, 1914. Tucked wearing apparel. Shirt bosoms made from tuckings, being more specifically provided for as "Clothing . . . and articles of wearing apparel of every description, composed of cotton or other vegetable fiber, . . . made up or manufactured, wholly or in part" than as "articles made wholly or in part of tuckings," are dutiable at 30 per cent ad valorem under paragraph 256, act of 1913, and not as 60 per cent ad valorem under paragraph 358. In the matter of protest 757652 of Snow's U. S. Sample Express Co., against the assessment of duty by the collector of customs at the port of New York.

T. D. 34828. October 13,, 1914. Drawback on cravenette-proofed or waterproofed fabrics and clothing. Drawback on imported fabrics and clothing cravenette-proofed or waterproofed by the Cravenette Co., Hoboken, N. J., for the account of their customers.

T. D. 34831. October 14, 1914. Drawback on cotton piece goods. Drawback on dyed cotton piece goods produced by the Pond Lily Co., New Haven, Conn., from cotton piece goods imported in the gray for the account of Stavert, Zigmala & Co., New York, and others.

T. D. 34858. October 21, 1914. Cotton cloth, woven figured. Figured cotton cloth woven on Jacquard looms being more specifically provided for as "cotton cloth . . . woven figured" than as "all other Jacquard figured manufactures of cotton", is dutiable at the appropriate rate according to the size of the yarn used under paragraph 252, act of 1913, and not at 30 per cent. ad valorem under paragraph 258. In the matter of protests 732972, etc of J. Sachs & Co. et al, against the assessment of duty by the collector of customs at the port of New York.

Recent Textile Patents

BOBBIN BORING Apparatus. 1,112,363. Napoleon Demers, Sherbrooke, Quebec, Can.

BOBBIN FOR MACHINES for the Manufacture of Pillow Lace. 1,113,671. August Matitch, Nottingham, Eng.

CARDING MACHINE Safety Device. 1,112,829 Oscar L. Owen, Whitinsville, Mass.

CLOTH Board Made of Pulp Material. 1,112,957. Wyle T. Wilson, Philadelphia, Pa.

CLOTH TREATING Machine. 1,113,532. Israel Barnett, Milwaukee, Wis.

DYEING. 1,113,765. James J. Fearon, Philadelphia, Pa.

DYEING MACHINE. 1,113,405. Robert D. Booth, Philadelphia, Pa.

DYEING TEXTILE Materials, Apparatus for 1,111,104. William R. Smith, Buffalo, N. Y.

DYESTUFF Which May be Developed on the Fiber, Manufacture of an Azo. 1,113,468. Carl Mueller, Biebrich-on-the-Rhine, Germany.

FABRICS, Spreader for Tubular. 1,113,905. Harry C. Pease, Grand Rapids, Mich.

FIBER from Cocoanut-Husks, Obtaining. 1,111,405. Alexander Z. Rothschild, San Francisco, Cal.

KNIT FABRIC and Making the Same, Welted. 1,113,166. Robert W. Scott, Boston, Mass.

KNITTING MACHINE. 1,112,456. Johan L. Kihlqvist, Stockholm, Sweden.

KNITTING MACHINE, Automatic Circular. 1,111,844. John Lawson, Central Falls, R. I.

KNITTING MACHINE Stop Mechanism. 1,113,246. Albert M. Pigeon, Philadelphia, Pa.

LACE MACHINE. 1,112,996. Jean Farigoule, Paris, France.

LOOM. 1,113,763. Bertha H. Breckenfeld, Los Angeles, Cal.

LOOM. 1,112,366. John E. Dustin, Fulton, N. Y.

LOOM HARNESS. 1,112,739. Paul A. Wagner, Carlstadt, N. J.

LOOM HARNESS Heddle. 1,112,740. Paul A. Wagner, Carlstadt, N. J.

LOOM LET-OFF Mechanism. 1,112,668. Henry Bardsley, Providence, R. I.

LOOM PATTERN Mechanism. 1,112,753. Henry Bardsley, Providence, R. I.

LOOMS, Method of Making Reeds for. 1,112,742. Paul A. Wagner, Carlstadt, N. J.

LOOMS, Reed for. 1,112,741. Paul A. Wagner, Carlstadt, N. J.

SHUTTLE. 1,112,799. Azel C. Hough, Janesville, Wis.

SHUTTLE TENSION Device. 1,113,045. Albert F. Petithory, Phillipsburg, N. J.

SHUTTLE TENSION Device. 1,111,435. Ernest Burgess, Norwalk, Conn.

SHUTTLE-TENSIONING Device. 1,112,675. David H. Clark, Greensboro, N. C.

SPINNING APPARATUS, Yarn. 1,113,286. Amariah Avery, Manchester, N. H.

SPINNING MACHINE. 1,113,434. William Hartley, Leicester, Eng.

SPINNING MACHINE. 1,113,489. Henry Ryder, New York.

STITCH-FORMING Mechanism. 1,111,132. Otis E. Brown, Brockton, Mass.

STOCKING. 1,111,353. Margaret E. Blessing, Philadelphia, Pa.

STOCKING. 1,111,658. Gustav A. Landenberger, Philadelphia, Pa.

TENSION DEVICE and Automatic Take-Up. 1,113,243. Charles Parent, Medford, Mass.

THREAD TENSION Device. 1,111,500. George J. Schautz, Scranton, Pa.

UNDERGARMENT, Union. 1,113,803. Lester D. Marsh, Malden, Mass.

UNION GARMENT. 1,112,720. William C. Powell, St. Joseph, Mo.

WARP STOP Motion, Electromechanical. 1,112,365. Gordon J. Dustin, Plymouth, Mass.

WOVEN FABRICS, Device for Determining the Frequency of Shots in. 1,112,026. Heinrich Oberholzer, Maehrisch Schoenberg, Austria-Hungary.

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TRADE MARKS RECENTLY FILED FOR REGISTRATION

79,831. Bleached and unbleached muslins. Mark: Edris. Owner: Wheeler & Motter Mercantile Co., St. Joseph, Mo.

79,937. Ladies' dresses and skirts. Mark: Fairsex. Owner: Newman Dress & Skirt Co., Cleveland, O.

79,940. Coats, hats, dress, stockings, etc. Mark: Uwearem. Owner: Leo J. Wolfenberger, Wichita, Kan.

70,105. Silk textile goods. Mark: Millennium. Owner: Alfred J. Stahl, New York.

71,351. Bleached gauze. Mark: First Aid. Owner: Carson, Pirie, Scott & Co., Chicago, Ill.

78,417. Piece goods made from cotton and chemically-treated wood fiber. Mark: Radioux. Owner: Galey & Lord, New York.

79,188. Serges, cheviots, coatings, etc. Mark: Kingfisher. Owner: Mark Fisher Sons & Co., Montreal, Canada.

68,143. Hosiery. Mark: C. C. C. Owner: Wm. B. Kohlman, New Orleans, La.

71,118. Shirts. Mark: S Shurt M. Owner:

71,495. Cotton piece goods. Mark: Clover Cloth. Owner: Amoskeag Mfg. Co., Manchester, N. H.

78,430. Knit reefers, sweaters, coats, mufflers, etc. Mark: Way. Owner: J. H. Way & Sons Co., Philadelphia, Pa.

79,101. Cotton piece goods. Mark: Resolute. Owner: Catlin & Co., New York.

79,309. Cotton piece goods and dress goods. Mark: 1101 Cloth. Owner: Amoskeag Mfg. Mfg. Co., Manchester, N. H.

79,310. Cotton piece goods and dress goods. Mark: 1301 Cloth. Owner: Amoskeag Mfg. Co.

79,661. Hosiery. Mark: Cannoneer. Owner: James W. Cannon, Concord, N. C. Burnham-Munger-Root Dry Goods Co., Kansas City, Mo.

74,604. Linen, table-linen, etc. Mark: a Map of Ireland. Owner: Webb & Co., Newtownards, Ireland.

76,758. Cloths and stuffs of wool, worsted and hair. Mark: Kashmera. Owner: John Wilson, Ltd., Gildersome, Eng.

78,355. Silk piece goods. Mark: Peau de Faille. Owner: M. Kurzmans Sons, New York.

78,736. Overalls, shirts and blouses. Mark: The Winner. Owner: Berne Mfg. Co., Berne, Ind.

79,587. Cotton piece goods. Mark: Suedette. Owner: L. & E. Stirn, New York.

79,644. Cotton, linen, silk, woolen piece goods. Mark: Bigger-than-Weather. Owner: F. A. Patrick & Co., Duluth, Minn.

79,750. Hosiery. Mark: Havaluk. Owner: Thomas B. Corpening, St. Louis, Mo.

79,864. Petticoats. Mark: Empress. Owner: Max Auspitz, Chicago, Ill.

79,980. Hosiery. Mark: Vanitie. Owner: Wm. Brown & Co., Phiiadelphia, Pa.

79,981. Hosiery. Mark: Defiance. Owner: Wm. Brown Co., Philadelphia, Pa.

80,000. Women's garments. Mark: Welworth. Owner: The L. N. Gross Co., Cleveland, O.

80,107. Braids. Mark: Piquette. Owner: Strauss Bros. & Co., New York.

64,962. Collars, cuffs and shirts. Mark: Flexo. Owner: Searle Mfg. Co., Troy, N. Y.

70,252. Waterproof fabrics. Mark: Resistal. Owner: Resistal Process Co., Chicago, Ill.

79,993. Clothing. Mark: True-Worth. Owner: Fred Schneider, Omaha, Neb.

79,158. Hosiery. Mark: Messenger. Owner: John M. Given, Inc., Pittsburgh, Pa.

79,160. Hosiery. Mark: Sunshine Girl. Owner: John M. Given, Inc., Pittsburgh, Pa.

65,531. Upholstering-cloth. Mark: Motokloth. Owner: Earlsdale Worsted Co., Clinton, Mass.

77,772. Ginghams. Mark: Palm. Owner: Delgado Mills, Wilmington, Del.

78,314. Cotton piece goods. Mark: Golden Gate. Owner: Rice-Stix Dry Goods Co., St. Louis Mo.

79,766. Textile fabrics, cotton and silk piece goods. Mark: Moussedo. Owner: Societe Rodier, Paris, France.

79,767. Textile fabrics, cotton piece goods. Mark: Rodeline. Owner: Societe Rodier, Paris, France.

79,869. Textile undergarments. Mark: Powder Puff. Owner: Doernberg & Stein, New York.

80,181. Threads and yarns. Mark: Octagon Knitting Cotton. Owner: Lees Mfg. Co., Westport, Conn.

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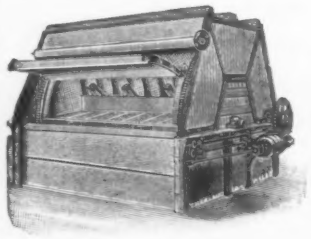

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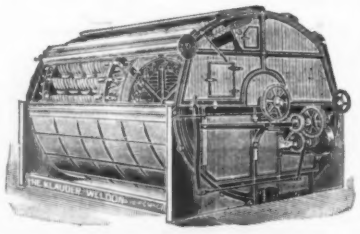

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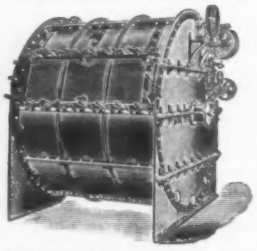

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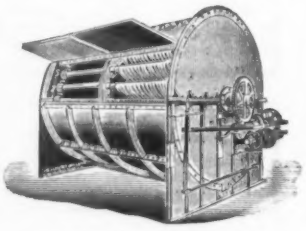

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——See Humidifying Apparatus.

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Main, Charles T.
Myrick, J. W. H.

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Johns-Manville Co., H. W.

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Johns-Manville Co., H. W.

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——See also Mill Supplies.

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Belting, Link.
Graton & Knight Mfg. Co.

Belt Cement.
Graton & Knight Mfg. Co.

Belt Dressing.
Graton & Knight Mfg. Co.
Stephenson Mfg. Co.

Belt Lacing, Leather.
Graton & Knight Mfg. Co.

Belt Tighteners.
American Tool & Machine Co.
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Birch Bros. (Albert Birch, prop.)
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Philadelphia Drying Machinery Co.
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Textile-Finishing Machinery Co.

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Electro Bleaching Gas Co.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co., The.
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Diamond State Fibre Co.
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Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
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Root, C. J., Co.

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Scaife, W. B., & Sons.

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Parks & Woolson Machine Co.

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Burr Pickers.
Curtis & Marble Machine Co.
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Button-Hole Machines.
Reece Button-Hole Machine Co.

Button Sewing Machines.
Union Button Sewing Co.

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Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Schwartz, L. H. A., & Co.
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Taunton-New Bedford Copper Co.
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Birch Bros., Somerville Mach. Wks.
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Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
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Leigh & Butler.
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Firth, William, Co.
Leigh & Butler.
Richards, Atkinson & Haserick.
Riley, C. E., Company.
Smith & Furbush Machine Co.

Card Leather.
Graton & Knight Mfg. Co.

Carding Machinery.
Saco-Lowell Shops.
Smith & Furbush Mch. Co.

Card Stampers and Repeaters.
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Cloth Shrinking Machinery.
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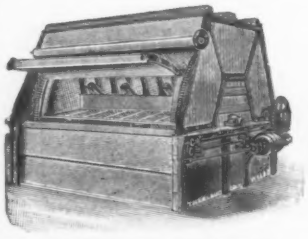
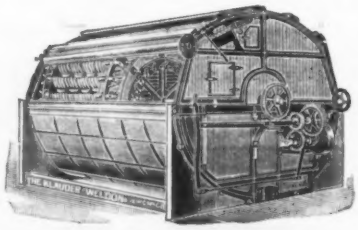


RAW WOOL AND COTTON MACHINE.

MACHINES
sold on
2 MONTH'S TRIAL
YOU
TAKE
NO
RISK

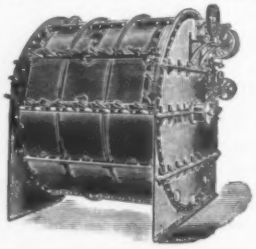


SKEIN AND SLUBBING MACHINE.

KLAUDER-WELDON DYEING MACHINE COMPANY

HUDDERSFIELD, ENGLAND. *AMSTERDAM, N. Y.*

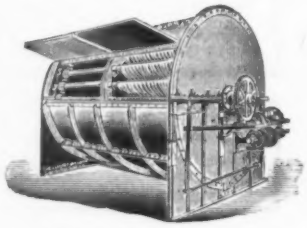
Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins — Slubbing — Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



SULPHUR HOSIERY MACHINE.

Special Machines for Sulphur Colors

WILL EARN THEIR COST IN LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



SULPHUR SKEIN MACHINE.

HERE IS A STANDARD FOR

LOOM HARNESS
Quality

Uniformity in quality is an important feature of our loom harnesses. We not only use the best materials we can buy but make the harnesses with the utmost care and rigidly inspect every harness in the various processes through which it goes. The best materials, care in manufacturing, combined with critical inspection are bound to produce superior harnesses of always uniform quality.

GARLAND MFG. CO.
SACO, MAINE

G
TRADE MARK

Buyers' Index

This department is conducted for the benefit of our subscribers. The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisements. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in the classification here given such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources. Advertisers whose names do not appear under headings to which they are entitled will please notify the publishers.

Air Moistening System.
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Architects and Mill Engineers.
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Myrick, J. W. H.

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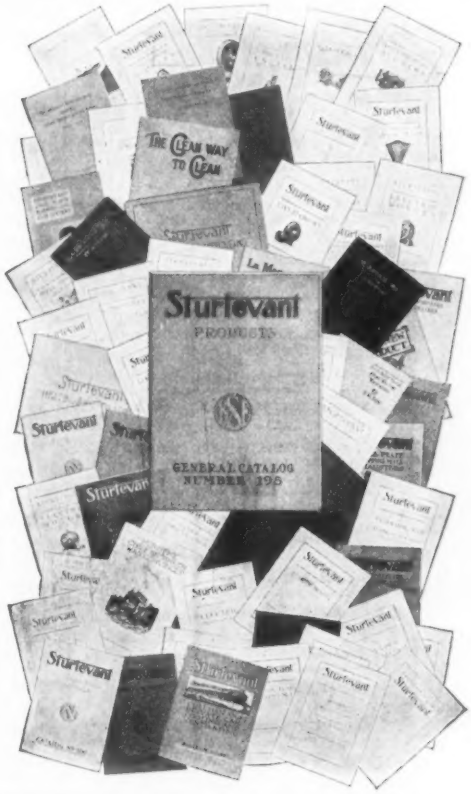
Many People Do Not Realize the Vast Proportions of Our Business

They know that the name

Sturtevant
REG. U. S. PAT. OFF.

is synonomous with "*Fans*" and that Sturtevants are the largest manufacturers in the world of Fans, Heating and Ventilating Apparatus, but they do not know of our other products. Our other products are not experiments but are in universal use all over the globe.

We make Engines, Generating Sets, Turbines, Economizers, Drying Apparatus, Mechanical Draft Apparatus, Motors, Steam Traps, Air Washers, and other less important lines.

These products are described in 70 catalogues and bulletins. We have a concentrated description of them in our General Catalogue just published—Catalogue No. 195-T.

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Philadelphia Textile Machinery Co.
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Royersford Foundry & Machine Co.

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Moore, C., & Co.

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Garland Mfg. Co.
Steel Heddle Mfg. Co.

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Lavigne & Suter.
Richards, Atkinson & Haserick.
Steel Heddle Mfg. Co.

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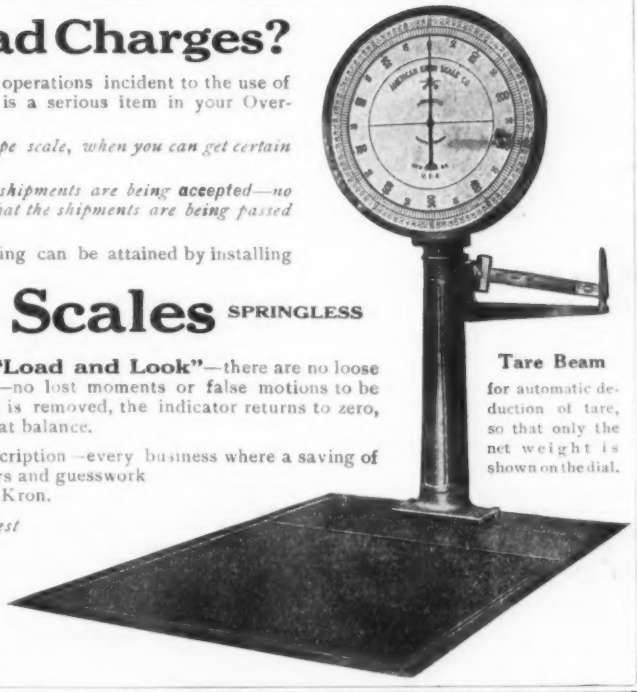

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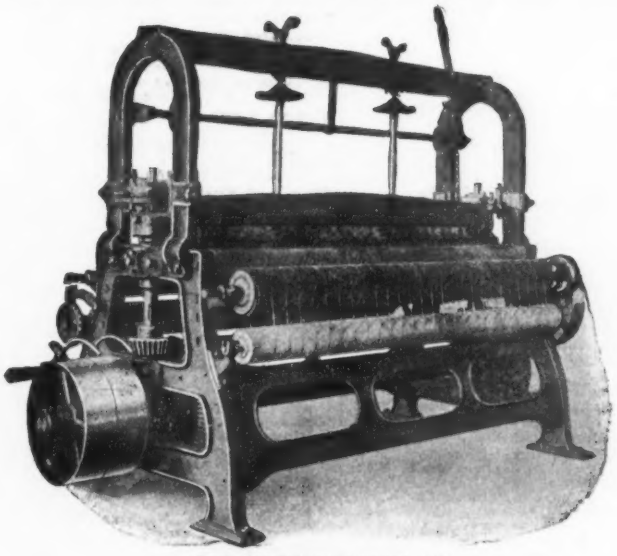

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Johns-Manville Co., H. W.

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Johns-Manville Co., H. W.

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Mason Machine Works.
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Villa, A. P., & Bros.

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Silk Throwsters.
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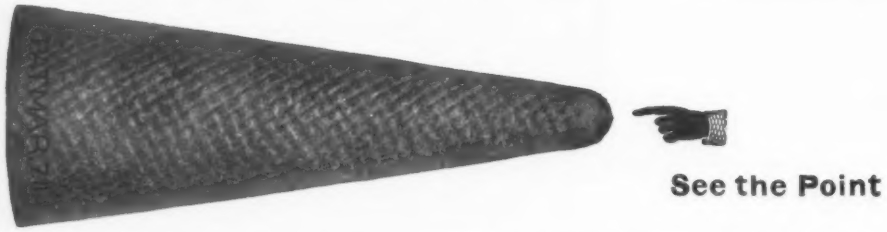

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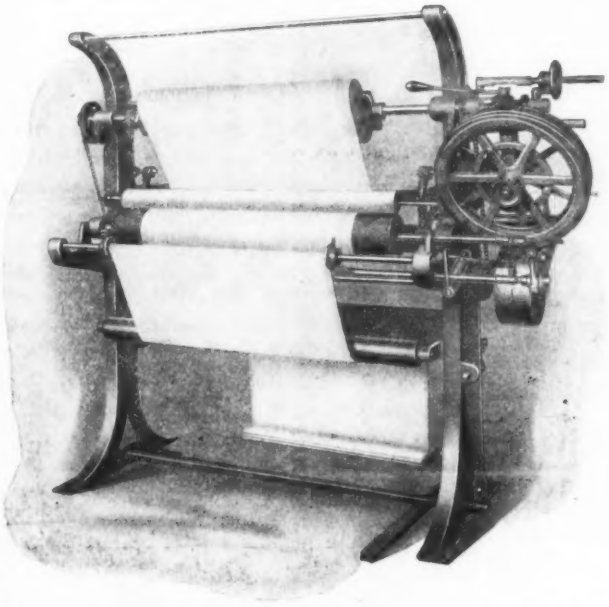
Lancashire Winder
COTTONS WOOLENS SILKS



Above is machine with Measurer, 16-inch Quadrating Dial fitted with Automatic Stop to package a predetermined yardage and with instant opening, closing and adjusting Board-grip

Its price will surprise and please you

Its quality will make you wonder

And its efficiency will make you order more

Has been thoroughly tested out in actual use

The new QUADRATING DIAL in either the nine or sixteen inch diameter is one of its many merits Merely turning a pin on dial from one mark to another, gives quick adjustment for any kind of cloth Positive, accurate and simple

The BOARD GRIP alone is worth the total price of machine Shifts from one length of board to another at once A time saver

VARIOUS ATTACHMENTS for all conditions No clap-trap You pay for what you need, no more

PARKS & WOOLSON MACHINE CO
SPRINGFIELD - VERMONT U S A

Publishers' Page

Looking Ahead

One result of the world war has been the curtailment of advertising by few concerns who have had their sources of supply completely cut off, while others are retrenching simply because "these are war times," and there has been a temporary check in some lines of business.

There is another group of manufacturers who are far-seeing and progressive, who realize that the ultimate result of the war, in so far as American industry is concerned, will be better business conditions, and that very soon.

For example in this issue of the Textile World Record there are nine new advertisers and one old one, who because he wants to take advantage of the conditions, has increased his space four times over. (These figures do not include the transient advertisements under "Wants, For Sale, etc.")

Of these new advertisers five are manufacturers of distinctively textile machinery, the others manufacture factory equipment.

Many other manufacturers could profitably take advantage of the present conditions and do some aggressive advertising that would help them build up future business, whether or not it would bring them immediate orders.

Perhaps, you are one of these?

Investing in Books for Profit

In reading the New Publications Department of the Textile World Record month by month, our readers must have noted the scarcity of American books on textile manufacture as compared with English, German and French books. Why are not more American books published? Primarily because the demand from the textile industry is so small that there is nothing but discouragement in store for the author and publisher.

One standard English textile book on cotton spinning has had a sale of 16,000 copies, and probably not over 200 copies have been sold in the United States. Another popular book among superintendents and overseers in worsted mills has reached its fifth thousand. Editions of two and three thousand are not uncommon in Europe.

Technical books, and papers like the Textile World Record, are the superintendents' and overseers' tools. Every superintendent and overseer ought to have his own library for his own good and the good of his mill. Even more important is the need of every mill for a technical library for the good of its entire organization.

Some American mills and some progressive overseers and superintendents consistently purchase all new books published which touch on their work. More of them should form this habit. Another way to improve and advance the industry is to produce other books and articles and to be critical of statements that do not meet your views. Publicity of this sort stimulates development and causes the industry to advance. The man who works out a new idea or a better method of applying an old idea and gives this information to his industry is a public benefactor; he adds his mite to the legacy given the world by the great textile inventors.

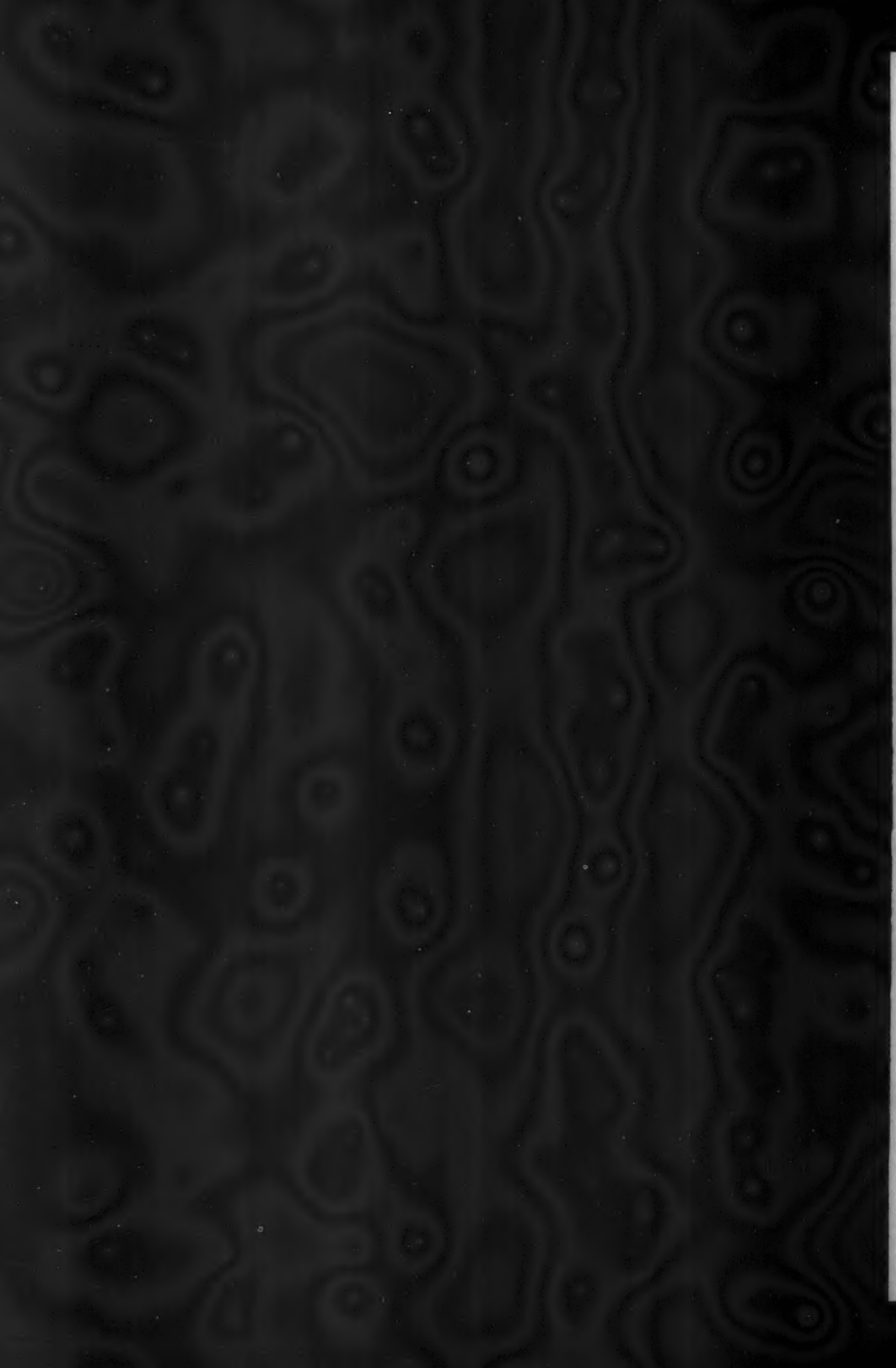
More information, suggestion and discussion, more reading of the current history and news and a consequent closer touch with the improvements constantly being made in methods, processes and machinery, would, if combined with the American genius for organization, help to get and to hold some of the great foreign business of warring Europe.

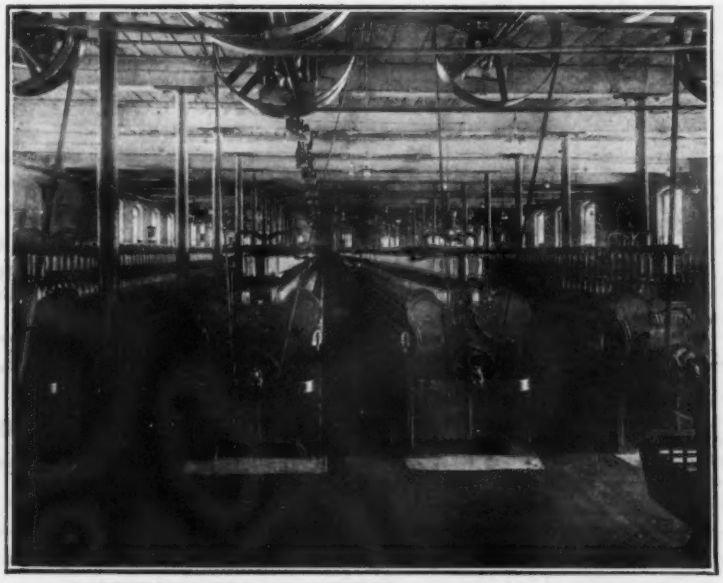
We have compiled a catalog which lists all the best books on textiles in the English language and as many copies as desired will be sent to mills and others who are interested.

Monthly Circulation Statement

Of this edition over 6,250 copies are printed and all are needed.

The Textile World Record is a member of the Audit Bureau of Circulations.





SPINNING ROOM OF THE AMERICAN YARN CO., PAWTUCKET, R. I.
one of the mills which has proven the efficiency of Anaconda

ANACONDA TEXTILE SPECIAL BELTING

What Does Belt Slippage Cost YOU?

DO you know that slipping belts on your looms cause a loss of production of 5% or more, representing a good many dollars in a year's time? There is *one* belt, and *one only*, which will completely eliminate this loss, and without increased belting cost.

ANACONDA TEXTILE SPECIAL

will positively keep your looms and other machines running up to the standard intended. You know what this standard is for your machines, and if you don't believe they are running below standard, test them with a tachometer, or ask us to test them for you. You will find that they are not running up to standard unless you are using Anaconda. Write us now, it will make you money.

MAIN BELTING COMPANY

New York City
309 Broadway

12th and Carpenter Streets
PHILADELPHIA

Birmingham, Ala.
22 South 20th Street

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NATHAN HEARD LOUIS C. SMITH F. A. TENNANT
Formerly
CROSBY & GREGORY
ESTABLISHED 1854

OLD SOUTH BUILDING
BOSTON, MASS.

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TRADE MARKS, DESIGNS AND COPYRIGHTS

W. E. S. DYER
MILL ENGINEER and ARCHITECT

Design, Specifications and Superintendence for Textile Mills, Industrial Plants and Kindred Industries.

Reorganizations, Valuations and Reports on Mill properties. Power Plants of every description and suggestions for their economy of operation.

Land Title Building, - Philadelphia, Pa.

John W. Ferguson Co.
Engineers and Building Contractors
Specialists in Mill, Shop and Industrial Plant Construction
United Bank Building - Paterson, N. J.

Simplex Yarn Tables.

Showing equivalent sizes of different systems of numbering yarn; cotton, woolen, worsted, etc., so that the sizes of different standards may be quickly compared. Also contains a number of other valuable yarn tables for designers, manufacturers and knitters. PRICE 50c. Textile World Record, Boston.

J. W. H. Myrick, A. S. H. V. E.
Inventor of the
Autoforce Ventilating System
Largest Textile Ventilating Engineers in America
Boston, Mass.

Laboratory Manual of Dyeing and Textile Chemistry—*Matthews.*

The method of presentation and the subject matter are the outcome of a number of years teaching on the part of the author. An elementary manual to be used in conjunction with the more general treatises on the subject. 183 experiments; test questions; 360 pages; cloth. **PRICE $3.50 PREPAID.**
Catalogue of Textile Books sent free.

LORD & NAGLE COMPANY, Textile Publishers, 144 Congress Street, Boston, Mass.

The Science of Knitting

BY
ERNEST TOMPKINS

330 Pages, Illustrated *Price $3.00 Postpaid*

Some of the contents are—

Yarn Numbering and Calculations; Elements of Knitting; Formulas for Ribbed Fabrics; Width of Tubular Goods for Different Numbers of Needles aud Yarns; Width of Fabrics from Different Machines; Production of Circular Knitting Machines; Weight of Goods; Twist in Knit Fabrics; Set; Space Allotment in Knitting Mills; Knitting Machine Gauges; Range of Fabrics from the Same Gauge or Cut; Burs; Spring Needle Latch Wheel Tuck Stitch Figures; Vertical Patterns in Latch Needle Work; Cams; Inserting Needles in Ribber; Take-Up; Locating Source of Trouble in Knitting; Designing with Pattern Wheels; Theory of Knit Fabrics; Ratio and Proportion; Weights and Measures; Mensuration; Miscellaneous Notes on Belting; etc.

In addition there are 60 illustrations and 75 tables of yarns, fabrics, machinery and productions.

The volume is of convenient size, is a model of typographical arrangement, well printed and bound in blue leather with gold lettering.

LORD & NAGLE COMPANY
144 Congress Street, Boston, Mass.

ARTHUR D. LITTLE, Incorporated
CHEMISTS and ENGINEERS

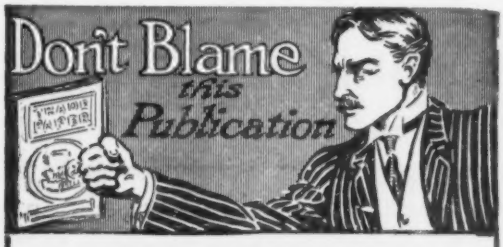
Chemical Division

Design of Special Plants
Reducing Cost of Processes
Control of Supplies
Elimination of Wastes

Engineering Division

Fuel Economy and Smoke Abatement
Acceptance Tests on New Apparatus
Remodeling Power Plants
Steam Turbine Installation

93 Broad Street - - - Boston, Mass.



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THE **Ad-Builders**
BUKEY 54 BIBLE HOUSE N.Y.

The Adman's Supply House

Save 50% by ordering direct from the Ad-builders. The experts who build the kind of Ads that say something and ***mean*** it.

The Bukey Co., 54 Bible House, N. Y.

Textile and Industrial Plants

¶ This organization renders expert engineering service in connection with all industrial engineering problems.

¶ Plans and specifications are prepared for the erection and complete equipment of textile mills and other industrial plants, including steam and hydraulic power plants.

¶ The reorganization of textile and industrial plants is a highly developed function of this concern.

¶ A wide experience in the examination and survey of water powers, power plants and manufacturing and other plants is utilized in the preparation of special reports, with reference to the improvement or valuation of such properties.

CHARLES T. MAIN

Mill Engineer and Architect

201 Devonshire St., Boston, Mass.

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PATENTS

If you have an invention which you wish to patent you can write fully and freely to Munn & Co. for advice in regard to the best way of obtaining protection. Please send sketches or a model of your invention and a description of the device, explaining its operation.

All communications are strictly confidential. Our vast practice, extending over a period of nearly seventy years, enables us in many cases to advise in regard to patentability without any expense to the client. Our Hand-Book on Patents is sent free on request. This explains our methods, terms, etc., in regard to ***Patents, Trade Marks, Copyrights,*** etc.

All patents secured through us are described without cost to the patentee in the *Scientific American*

MUNN & COMPANY, *Solicitors of Patents*
390 Broadway, New York and 625 F St., Washington, D. C.

Money-Saving, Money-Making Opportunities

WANTS, FOR SALE, ETC.

This is a special department for those who wish to buy or sell second-hand machinery, mills or mill sites, patents, etc., and for such advertisements as "Help" or "Situations Wanted." A special low rate is charged, viz., $1.00 for one-half inch, single column; $2.00 for one inch, single column, and in the same proportion for larger space. By measuring these advertisements and counting the words you will see what space is needed for your announcement. No advertisement accepted for less than $1.00. Remittance should accompany the order. No extra charge for forwarding replies sent in care of the Textile World Record.

Address: Want-Ad Dept., Textile World Record, 144 Congress Street, Boston, Mass.

Towel Weaver Wanted

Reliable man fully experienced on Turkish towels, capable mechanic thoroughly conversant with equipment and production costs. Executive experience desirable. State all particulars. Confidential. Address "Towels," care Textile World Record, Boston, Mass

For Sale--Continuous Crabb

Four-bowl, 70″x12″ rolls; 5″ brass rollers in tanks, wooded 3″ cypress; clutch driven; complete with folder and ratchet tension. Perfect condition. **New in April, 1914.** Owners changing to English system. Address "Crabb," Textile World Record, Boston, Mass.

We will Handle all Your Drafting and Designing for a Low Monthly Rate

Send for our time contract plan and cut down your drafting expense on special machines and tools. Our line of calculating charts will interest you.

The S. C. Carpenter Drafting and Engineering Co.
49 Oakland Terrace, Hartford, Conn.

DIESEL OIL ENGINE

170 hp. direct connected to 120 kw., 250 v. Generator, complete.
75 hp. belted type, complete.
Cheap Power. Sacrifice.
Address Power Equipment Company, 500 Fifth Ave., New York

ROCK MAPLE

LOGS

***of* The Best Quality**

For Bleaching, Dyeing and Printing Rollers. Prompt delivery in any quantity. All consignments made direct from Adirondack Woods. Write for prices.

GEO. E. HARTWELL, Northville, N. Y.

HARDING & FANCOURT, Inc.
Kensington Soap Works

Soaps of Quality, Turkey Red Oil, Tuscan Softener
Soluble Oils and Olive Oil

516-18 So. Delaware Ave. PHILADELPHIA

To Woolen Manufacturers

Will pay cash for silk threads, garnetted waste, silk noils, hard twist wool waste, odd lots tender organzine, and spun silk.

I am specializing in Artificial Silk Thread Waste for spinning purposes, etc.

DANIEL J. REILLY, Jr.
P. O. Station "S." **32 Ditmars St., Brooklyn, N. Y.**

MILL FOR SALE

at Salem, N. Y., on D. & H. R. R., with abundant WATER POWER all year. Fire protection system. A bargain on easy terms. Will Sacrifice to settle Estate.

J. P. GORMAN
1269 Broadway - New York

WANTED: POSITION
As Wadding Mill Manager

Any Company thinking about going into the Wadding business will find it of interest to consult me first. I have had fifteen years experience with Independent Wadding Companies in Massachusetts, Rhode Island, Tennessee, Alabama and Georgia. I have all the plans and specifications to start a Wadding Mill from the foundation of the building to the manufacturing of the finished product, and can furnish the very best of references. For further information address, George M. Miller, 616 Smithfield Ave., Saylesville, R.I.

INQUIRIES FOR MEN

Our Registry Department frequently has calls for men to fill the following positions:

Pin Setters—
Engineers with first-class licences—
Superintendents on blankets and comfortables—
Men to take charge of back washers and gill boxes—
Men who understand Alsatian combers in cotton mills.

If you are able to fill any of these positions, it might be to your advantage to communicate with the:—

REGISTRY DEPARTMENT
Textile World Record
144 Congress St., Boston, Mass.

For Sale—Two Slightly Used Spinning Frames—For Fine Yarn

We have for sale two spinning frames, each of 200 spindles, made by G. Josephy's Erben, Bielitz, Austria. These frames were used only a short time and are in excellent condition. To make room in our mill for other equipment, we will dispose of this machinery very reasonably.

For particulars apply to

Western Rug Company, - Duluth, Minn.

Complete Knitting Plant

Now in Full Operation

For Sale Cheap

One of the finest and most complete Knitting Factory in the country. Manufacturing a high grade line of hosiery, sweaters, shawls, skirts, bonnets, mufflers, etc. Sells direct to the consumer through agents. Cash received for 90% of goods sold before they leave the factory. Started business six years ago with three machines, now have forty. Business has never shown less than 20% net profit per year. Best of reasons for selling. Address "Complete Plant," Textile World Record, Boston, Mass.

An Economical Seller of Textile Machinery

A Philadelphia textile manufacturer (name on request) bought a textile machine costing about $600 00 and later on decided to sell it. He sent us an order for a 1 inch single column advertisement which ran three times in the Textile World Record at a total cost of $6.00.

When we wrote to find out whether or not he wanted the advertisement run the fourth time he replied as follows:

"Referring to your letter in reference to our advertisement, would say we have sold this machine through the advertisement in your paper."

If you have any second-hand machinery or equipment to sell that can be used in textile mills, perhaps, a 1 inch ad run one or more times on this page would sell it for **you.**

Address "Want Ad Dept."

Textile World Record

144 Congress St., Boston, Mass.

For Sale One 30", one 32", two 40" and one 44" Tolhurst Extractors, Automatic Band Folding and Cutting Machine, 30" Chandler & Price Lever Cutter, 30" and 36" Ventilating Fans.

Interstate Machinery Co., Troy, N. Y.

New York and Pennsylvania Agency

An energetic and successful machinery salesman is open to take an agency for New York City and vicinity, including Philadelphia and Pennsylvania, for cotton, woolen or worsted machinery or supplies. Would either arrange to give his whole time or would take several accounts on a commission basis. Address "Machinery Salesman," Textile World Record, Boston, Mass.

Overseer of Knitting

Would consider good Second Hand or Fixer's position. Have worked on heavy, medium and fine gauge work, men's underwear. Familiar with wool, worsted, cotton and silk yarn systems. Experienced on Cooper's and Crane's Spring Needle Rib Machines; Wildman's, H. B. Brenton's, Scott & Williams' Latch Needle Machines; Tompkins' and Crane's Flat Machines. Cooper's machine preferred 27 years of age, married; good references. Address "Knitting Overseer," Textile World Record, Boston, Mass.

HELP THE BELGIANS

ANYONE desiring to render immediate assistance to the BELGIAN REFUGEES can do so by sending clothing, express paid, to WILLIAM FIRTH, 15 Columbia St., Boston, and advice of shipment to 200 Devonshire St., Boston.

Parties sending clothing will facilitate the packing and shipments if they will deliver packages marked, A, B and C.

Packages A to contain clothing and material suitable for women's, girls' and children's use.

Packages B to contain clothing and underwear suitable for men and boys.

Packages C to contain nightshirts, outing shirts, blankets, underwear and any garments or material that can be used by the wounded and convalescent soldiers.

Those wishing to send money can do so. The same will be used for the purchase of underwear, etc., in this country, which is at once available for immediate use upon arrival in England or the continent.

Mr. Thomas, agent of the White Star Steamship Company, has kindly volunteered to ship all contributions of clothing free of charge.

Weekly shipments. Goods received on or before Monday shipped by steamer leaving the following Wednesday.

Situations Wanted

Manufacturers who are in need of Superintendents or Overseers for any department of mill work may learn of suitable men upon application by mail or telephone to C. T. DONLEVY, care Textile World Record, 144 Congress Street, Boston., who will give prompt attention to their requirements without charge.

Overseer of Finishing in woolen mill; has worked on all kinds of woolens and worsteds; familiar with all kinds of machinery; has had considerable experience on dyeing also; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6308, Textile World Record, Boston, Mass.

Wadding Mill Manager; fifteen years' experience with independent wadding companies in Massachusetts, Rhode Island, Tennessee, Alabama and Georgia; has all the plans and specifications to start a wadding mill from the foundation of the building to the manufacturing of the finished product; good reference.
6309, Textile World Record, Boston, Mass..

Millwright or carpenter; prefers a position as foreman; 32 years of age; married; will not go to Me., N. H., Vt., Pa., N. J., West, South or to Canada; good reference.
6310, Textile World Record, Boston, Mass.

Master Mechanic; familiar with engines, generators, motors, etc.; 42 years of age; married; good reference.
6311, Textile World Record, Boston, Mass.

Assistant Designer in cotton mill; would accept a position on jacquards or any other line of goods; could assist in office work; familiar with cotton calculations, etc.; 22 years of age; textile school graduate; will not go South or to Canada; good reference.
6312, Textile World Record, Boston, Mass.

Designer or superintendent in woolen mill; has worked on woolen and worsted fine suitings; trouserings, woolen and worsted overcoatings, plaid backs, also fine worsted men's wear; familiar with Crompton & Knowles looms; has a general knowledge of machinery of the various departments of a woolen or worsted mill; will not go to Pa., N. Y., N. J., West, South or to Canada; 27 years of age; good reference.
6313, Textile World Record, Boston, Mass.

Superintendent of Woolen or worsted mill; has worked on overcoatings, cheviots, low and high grade cassimeres, skein and piece dye worsteds; familiar with Davis & Furber cards; Johnson & Bassett mules and Crompton & Knowles looms; 50 years of age; married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6314, Textile World Record, Boston, Mass.

Superintendent or overseer of worsted spinning mill; has worked on botany, cross bred, mohair, alpaca, colored or white and worsted yarns; familiar with open and cone drawing, cap flyer or ring spinning and twisting, reeling, warping, spooling, gassing, yarn finishing and has a good knowledge of combing; 45 years of age; married; good reference.
6315, Textile World Record, Boston, Mass.

Shipper, office clerk or examiner in woolen mill; has worked on fancy woolens and worsteds, fancy dress goods, woolen and worsted piece dyes, serges, beavers, meltons, overcoatings and cloakings; 24 years of age; will not go West or South; good reference.
6316, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; has worked on everything spun on woolen mules, cotton, shoddy and wool mixes; all wool, all cotton, silk noils, etc.; familiar with D. & F. and J. & B. mules; 39 years of age; married; good reference.
6317, Textile World Record, Boston, Mass.

Overseer of Bleaching, starching or finishing; has worked on quilts, bed spreads, huck towels, Turkish towels, voils and voilettes, flannels, yarns, drills, sateens, sheetings, print and dye goods; familiar with all machines used in bleaching, starching and finishing of cotton goods; 24 years of age; will not go to Vt., or to Canada; good reference.
6318, Textile World Record, Boston, Mass.

Chief Engineer; has had a wide experience in textile mills; 37 years of age; married; will go West and to Massachusetts; good reference.
6319, Textile World Record, Boston, Mass.

Woolen or Worsted Cloth Designer or assistant superintendent; has worked on all classes of men's wear in fancy worsteds and woolens, army cloths and dress goods; 28 years of age; will not go West or South; good reference.
6320, Textile World Record, Boston, Mass.

Agent of Woolen Mill; would consider any executive position in textile mill from designer to agent; has worked principally on worsted men's wear and dress goods, also men's wear woolens; will not go West or to Canada; 38 years of age; married; good reference.
6321, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on all classes of worsteds and woolens; prefers Knowles looms; 42 years of age; married; will not go to Me., N. H., Vt., Pa., N. Y., N. J., West, South or to Canada; good reference.
6322, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen or worsted mill; has worked on coarse and fine woolens, worsteds, serges, cloakings, overcoatings, broad cloths, men's wear and women's wear fabrics; familiar with all makes of finishing machinery; 50 years of age; will not go West or South; good reference.
6323, Textile World Record, Boston, Mass.

Superintendent of cotton mill or boss carder in large mill; has worked on white, colored, plain and fancy carded and combed yarns and goods; familiar with American and English makes of machinery; 43 years of age; married; will not go South; good reference.
6324, Textile World Record, Boston, Mass.

Second Hand of Dyeing in woolen mill; has worked on ladies' dress goods, all kinds of silk effect piece dyes, serges, chinchillas, cotton cross dyes, raw stock, all kinds of worsted yarn dyes and rain cloth; familiar with Rodney Hunt and Klauder Weldon machines; 23 years of age; married; good reference.
6325, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; has worked on men's wear, ladies' dress goods, thibets, broad cloths, uniform goods, and balmacaans; familiar with Klauder, Weldon, Delahunty and Gessing yarn machines; 25 years of age; will not go to Pa., N. J., West, South or to Canada; good reference.
6326, Textile World Record, Boston, Mass.

Designer or assistant in worsted mill; has worked on worsteds, piece dyes, naturals, men's wear and dress goods, cotton worsteds, and all the different grades from fine domestic to 1/4 blood, also a little on woolens; 23 years of age; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6327, Textile World Record, Boston, Mass.

Assistant Superintendent in knitting mill; has worked on heavy woolen underwear and half hose, also all kinds of plaited half hose; familiar with all makes of machinery; 25 years of age; good reference.
6306, Textile World Record, Boston, Mass.

Overseer of dressing, winding and spooling in woolen mill; has worked on fancy woolens and worsteds; familiar with Davis & Furber and Cleveland machines; 34 years of age; married; will not go to West, South, or to Canada; good reference.
6307, Textile World Record, Boston, Mass.

Overseer of worsted combing or combing and carding; has worked on fine wools, 1/2 blood Australian; all coarse wools, 1/4 blood and below, foreign or domestic, also well acquainted with fancy mixes; familiar with Taylor, Wadsworth, Prince, Smith, Crompton, Knowles combs and Davis & Furber cards; 35 years of age; married; good reference.
6285, Textile World Record, Boston, Mass.

Overseer of woolen or worsted finishing; has worked on fancy worsteds and piece dyes, broadcloths, kerseys, meltons, zibelenes, double cloth, teddy bear cloth, unions and cotton warp woolens, chinchillas, smoking jackets, coverts, cap cloths, bedford cords, etc.; familiar with all makes of finishing machinery; 29 years of age; married; will not go to N. J., West, South or to Canada; good reference.
6286, Textile World Record, Boston, Mass.

Sewing Machine Adjuster; has worked on balbriggan and ribbed goods; familiar with Merrow, Union Special, Willcox & Gibbs, overlock, Union button, Singer button and Singer button-hole machines; 35 years of age; good reference.
6287, Textile World Record, Boston, Mass.

Superintendent of small spun silk mill, assistant superintendent of large mill; would consider position of overseer of drawing, etc., in good mill; has worked on spun silk yarn; familiar with Lowell, Green, Schlunsberger, Greenwood & Battey, Universal winding and Alsacetion combers; 31 years of age; married; will not go South; good reference.
6288, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; has worked on worsted, Axminster, Ingrain and woolen yarns; 40 years of age; married; good reference.
6289, Textile World Record, Boston, Mass.

Secondhand, overseer or superintendent of dyeing; has worked on woolen, cotton and linen yarns; familiar with Klauder-Weldon machines; 25 years of age; married; good reference.
6290, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on all classes of woolen and worsted goods; familiar with all makes of woolen and worsted looms, Crompton & Knowles, fancy, automatic and dobby, Crompton & Stafford fancy and Mason dobby looms; 33 years of age; married; will not go South; prefers New England or Canada; good reference.
6291, Textile World Record, Boston, Mass.

Cotton Mill Superintendent; has worked on all classes of goods from coarse baggings to fine silk jacquards; familiar with all American makes of machinery; 27 years of age; married; good reference.
6292, Textile World Record, Boston, Mass.

Overseer of Carding or carding and spinning; has worked on all kinds of carpet yarns from 1/5 of a run up to 20 cut hosiery yarns, also asbestos; familiar with Smith, Furbush, Davis & Furber and Whiting machines; 42 years of age; married; will not go to Me., N. H., Vt., South or to Canada; good reference.
6293, Textile World Record, Boston, Mass.

Superintendent or asasistant manager for mill or office or both in a textile mill, preferably knitting or spinning mill; has worked on flat and rib knit underwear, men's and women's; on spinning, woolen and cotton system; familiar with Cooper spring needle, flat needle and nearly all German makes of knitting machines; Singer, Union Special, and Merrow sewing machines; Tweedale & Smalley's cotton spinning machinery and Davis & Furber mules and cards; 26 years of age; will not go to Canada; good reference.
6294, Textile World Record, Boston, Mass.

Overseer of Spinning in woolen mill; has worked on fine suitings and overcoatings, 1 to 9 run, also knit goods, cotton mixes; familiar with Davis & Furber machines; will not go to R. I., Vt., Pa., N. J., West, South or to Canada; 46 years of age; good reference.
6295, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on all classes of goods; familiar with Crompton or Knowles looms of different makes; 50 years of age; married; will not go West, South or to Canada; good reference.
6296, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; might consider position as assistant designer or assistant superintendent; has worked on nearly all grades of woolens and worsteds; familiar with Crompton & Knowles looms; will not go West, South or to Canada; 45 years of age; married; good reference.
6297, Textile World Record, Boston, Mass.

Overseer of Weaving; has worked on worsteds; familiar with Crompton & Knowles looms; 41 years of age; married; good reference.
6298, Textile World Record, Boston, Mass.

Superintendent of Woolen Mill; would consider good position as overseer of weaving; has worked on worsteds, woolen and wool and cotton mixed goods; 50 years of age; married; prefers Mass., or N. H.; good reference.
6299, Textile World Record, Boston, Mass.

Overseer of Starching or mercerizing in cotton mill; has worked on percales, cambrics, sleeve linings, silesia, sateens, back filled calico goods, shirtings of all grades; familiar with Butterworth mercerizing frames and other machinery; 42 years of age; married; will not go South or to Canada; good reference.
6300, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; would consider good second hand position; has worked on ladies' dress goods, overcoatings, chinchillas, broadcloths, meltons, covert cloths, thibets, kerseys, piece dyes of all kinds, in fact all classes of goods; familiar with all makes of dyeing machinery; 24 years of age; will not go West, South or to Canada; good reference.
6301, Textile World Record, Boston, Mass.

Agent or superintendent of cotton mill; has worked on all kinds of cotton flannels and blankets, sheetings, shirtings, colored and fancy goods; 41 years of age; married; good reference.
6302, Textile World Record, Boston, Mass.

Superintendent of a plain cloth mill or yarn mill; has worked on sheetings, drills, ducks, lawns, scrims, voils, etc.; familiar with Saco, Lowell, Whitin, Mason, Fales & Jenks, Draper and other machines; 38 years of age; married; good reference.
6303, Textile World Record, Boston, Mass.

Manager or assistant of cotton mill; would consider position of overseer of dressing, spooling and glacing, etc.; has worked on cotton goods, American, Sea Island and Egyptian yarns; familiar with Universal winding, spooling, polishing and winding machinery; 36 years of age; married; good reference.
6304, Textile World Record, Boston, Mass.

Overseer of Dressing in woolen mill; has worked on all kinds of woolens, cottons, worsteds, wet or dry; familiar with Davis & Furber machines; 32 years of age; married; good reference.
6305, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen mill; has worked on all classes of woolens and worsteds, piece and stock dyes, kerseys, broad cloths, suitings, thibets, meltons, chinchillas, blankets, government cloths, etc.; familiar with all makes of finishing machinery; 25 years of age, married; will not go West, South or to Canada; good reference.
6203, Textile World Record, Boston, Mass.

Overseer of Ring Spinning; has worked on combed and carded, Peeler, Sea Island, cotton waste and all short stock, making from 6s to 65s knitting, hosiery, weaving and fancy yarns; familiar with Fales & Jenks spinning and twisting frames; Saco-Pettee, Saco-Lowell, Whitin, Mason, Howard & Bullough and Lowell ring spinning frames; Draper twisters and Foster winders; 23 years of age, married; will not go to Pa., N. Y., N. J., West, South or Canada; good reference.
6274, Textile World Record, Boston, Mass.

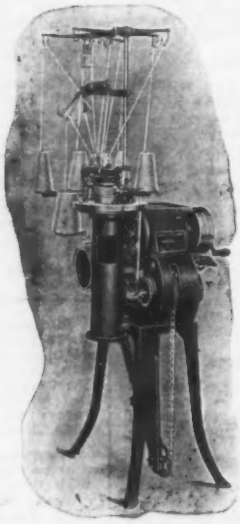
Overseer of Weaving in fancy worsted mill; has worked on men's wear and fancy worsteds for the last twenty-five years; prefers Knowles looms; 49 years of age, married; will not go South; good reference.
6275; Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on woolen, worsted and cotton; familiar with Knowles, Crompton and jacquard looms; 50 years of age, married; will not go West, South or to Canada; good reference.
6280, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill; has worked on all kinds of woolen goods and wool, shoddy and cotton mixes; familiar with Davis & Furber, Lombard and Cleveland machines; 41 years of age, married; will not go West, South or to Canada, good reference.
6278, Textile World Record, Boston, Mass.

Here's the Machine that Saves 7 to 15 Cents a Dozen

On the Manufacturing Cost of Half Hose



IMPROVED MODEL F MACHINE

Is there an abundance of skilled labor for topping in your locality? If so, you are fortunate.

If not, you should **investigate our Model F Machine,** which produces half hose **without skilled labor** at a saving of from 7 to 15 cents per dozen, and makes women's stockings with a knitted turned welt, dropping both from the machine.

Established 1805

SCOTT & WILLIAMS, INC.

88 PEARL STREET
BOSTON

NEW YORK UTICA

KNIT.

.....

New Mills.

*Canada, Ontario, St. Catharine's. The new silk manufacturing company, which will establish a plant here, has organized under the style of the St. Catharine's Silk Mills, Ltd. A building on Carleton St. has been secured and, is being equipped with three weaving machines to manufacture women's silk underwear, petticoats and gloves. The capital stock is $100,000. H. C. Specht is president; F. L. Kromer, treasurer, and B. S. Griffin, who has been operating a branch of the Niagara Silk Mills of North Tonawanda, N. Y., at Brooklyn, N. Y., manager. It is expected that manufacturing will be started October 10 and the product will be sold by R. L. Baker & Co., Toronto.

*Georgia, Gainesville. Archibald C. Meldrum, Aubrey Meldrum, M. L. Meldrum and James Meldrum have incorporated the Gainesville Hosiery Mill Company with capital stock of $100,000. A. C. Meldrum was recently reported interested in a hosiery mill project of 100 knitting machine capacity.

Minnesota, St. Paul. Quarters at 531 Rice St. have been leased for a period of three years by a concern known as the National Knitting Company and several knitting machines and finishing machines have been installed for the manufacture of woolen and worsted sweater coats. 2/20s wool and 2/20s and 3/20s worsted yarns are used. The product will be sold direct to jobbers and a retail business will be operated in connection with manufacturing. Meyer Kuller, formerly superintendent of the Minnesota Knitting Mills, and a Mr. Frich, who operates the Boston Furniture Company, are the proprietors of the new concern.

*New Jersey, Rahway. The Milbury-Atlantic Mfg. Company, who it was noted recently would install equipment for making knitted bathing suits will have 5 knitting and 10 sewing machines in this department.

New York, New York City. A new silk hosiery plant has been established in the Bronx at 2157 Prospect Ave., by E. Boyd and Max Nydegger, under the name of the Invader Textile Corp. Mr. Boyd is president and buyer of yarns, and Mr. Nydegger is treasurer and buyer of machinery and supplies. The business has been incorporated with capital stock of $75,000. Lines of full fashioned silk hosiery are manufactured, and the company has ten Hilscher hosiery frames, a 200-spindle silk winder, 4 loopers, 4 seamers, etc. The machinery has all been installed and is operated by electric power. The product is sold direct.

Pennsylvania, Danville. An equipment of 12 knitters and other machinery for the manufacture of seamless hosiery has been installed by the Weona Hosiery Mills, who are commencing their operations in this town.

Pennsylvania, Mohnton. A brick mill is being erected on Wyomissing Ave. by M. C. Killian and machinery will be installed for manufacturing half hose, to begin manufacturing about January 1. Mr. Killian was formerly connected with the Mohnton Knitting Mills and the Electric Knitting Company. He is now arranging for equipment.

Pennsylvania, Philadelphia. The Eskimo Knitting Mills have leased a portion of the old Leicester & Continental Mills, at Lena & Armat Sts., Germantown, where they are installing one double rib knitting machine, 6 flat knitters and 7 sewing machines, which they will operate by steam power on sweater coats, cardigan jackets and fancy knit goods, which they will sell direct. The owners of the plant are Claude Haines, Benj. Rosengarten and James Rosenfeld.

Pennsylvania, Philadelphia. The Philadelphia Hosiery Company has been started up by Calvin M. Franklin at 1543 Ruan St., Frankford, where he has installed 24 knitters for the manufacture of mercerized half hose. The product is sold direct.

*Pennsylvania, Philadelphia. The Rivet-Knit Hosiery Company, reported by us as being organized with offices at 1215 Market St., when ready to start up will be incorporated with a capital of about $100,000. At this time the organizers of the concern, whose names cannot be obtained, are looking up an equipment for the manufacture of full fashioned hosiery. As to the location of the concern and when it will be started up no information can be given out until they apply for their charter.

Pennsylvania, Philadelphia. It is reported that parties in this city, whose names cannot be secured at this time, have in contemplation the starting up of a plant for the manufacture of full fashioned hosiery. They purpose starting up a company with a capital of $200,000 and upwards which they intend calling the Pennsylvania Knitting Mills Co.

Pennsylvania, Rothsville. Machinery formerly operated at Bowmansville by the Conestoga Hosiery Co., of Brownstone, has been installed in a building here. 144-needle half hose will be manufactured. A. V. Walter has charge of the plant.

*Pennsylvania, Sellersville. New and larger quarters have been leased by F. E. Munich, of Philadelphia, comprising a 3-story mill and basement at Sellersville. The lease is for six years. Mr. Munich is a manufacturer of patented garter attachment hosiery and increasing business has compelled an increase in his facilities. The Philadelphia office and factory has been removed from 2720 Hope St. to 435 N. Broad St. The plant at Sellersville will be a branch.

*Pennsylvania, White Haven. Manufacturing will be started in about ten days by the new White Haven Knitting Co., in which J. F. Thomas, of Schuylkill Haven, was recently reported interested. Children's union suits will be made on 10 knitting machines and 15 sewing machines, using 16s cotton yarn. Electric power will be used. The new company will be incorporated with capital stock of $10,000 and William Mengle will be elected president; E. Moyer, treasurer; H. Peters, superintendent, and J. Fink Thompson, buyer. Mr. Thompson recently started up a similar plant at Allentown, Pa., under the name of the L. & S. Knitting Company.

Are You Satisfied With What Yesterday Offers You?

Walk through your mill and note the changes you have made in operation, in machinery, in methods, during the past five years; yes, even the last twelve months. Would you be satisfied to give up all these betterments? Certainly not.

So it is with the supplies you use; when you decide to be as reasonable with yourself in regard to them as you are in all other textile problems you will demand of them the same efficiency you demand of your other equipment.

Wyandotte Textile Soda

and

Wyandotte Concentrated Ash

are made with a definite purpose in view, and that purpose is to give better results, better in feel and in handling, greater tensile strength and resiliency, more loftiness, and improved shades and colors. These results are distinctly noticeable where Wyandotte products are used in place of the other alkalies which you now use.

And as to cost, here again you will be agreeably surprised, for these results are obtained at no increase over your present cost. And many times you will even find the cost has been actually decreased.

Why not ask us more about the use of these superior products? If we can help you on the class of work you are making we will tell you where and how. If we cannot we will be equally frank in telling you we cannot. Order from your supply house.

The J. B. Ford Co., Sole Mfrs., Wyandotte, Mich.

This Soda has been awarded the highest prize wherever exhibited

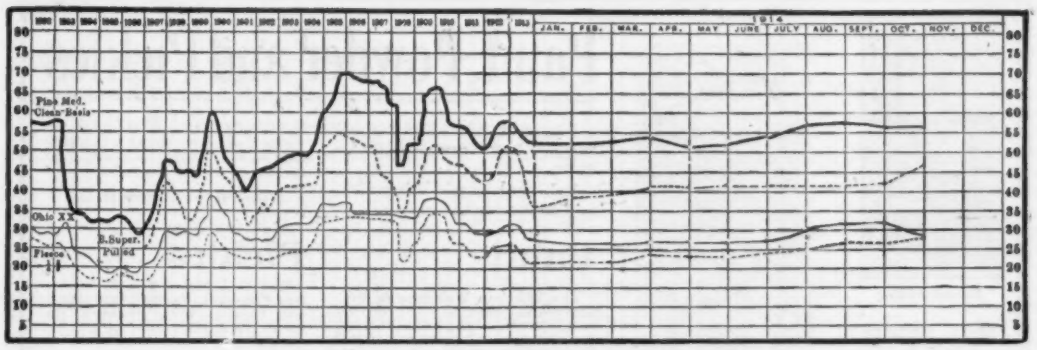


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

THE WOOL MARKET

The features of the wool market in this country are high prices, particularly for the medium and low grade wools, and a moderate volume of business. Manufacturers have not bought the quantity of wool that was expected. Orders for army goods, while large when taken by themselves, form but a comparatively small part of the productive capacity of the industry. The general trade in wool goods does not show any marked activity, in fact there are pronounced signs of depression, cancellations having come in freely and buyers having operated in a very conservative way. This condition, however, has not affected prices for wool, which are firm owing to the extraordinary conditions abroad. The embargo on wool and wool products in England and Australia has been extended so as to cover tops and many classes of woven goods. The English market is reported to be bare of medium and coarse wools suitable for army goods, but a supply is still available from the colonies and South America. In Australia wools can be exported providing satisfactory guarantees are given that they will not reach Germany and Austria. There are reports that New Zealand is to place an embargo on wool exports and this step under the circumstances would not surprise the trade.

WOOLEN.

New Mills.

*Canada, Ontario, Kincardine. William Mitchell, previously reported interested in establishing a small knitting plant, would like to secure a partner with $1,000 to $5,000, capable of taking charge of the manufacturing end of the business of manufacturing woolen yarns, weaving tweeds, flannels, blankets and knitting wool socks. Mr. Mitchell would like to start with one set of cards, 4 looms and a number of knitting machines and to develop the knitting end of the business as they went along. It is proposed to submit a by-law to the tax payers on January 1 for the purpose of raising money and if it is carried through, to commence building operations as soon as weather permits. If the plan progresses favorably manufacturing will be started in the spring of 1915.

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Enlargements and Improvements.

*Canada, New Brunswick, Moncton. New hosiery knitting machines and finishing equipment comprise the additions made by the Humphrey Unshrinkable Underwear, Ltd. They have added the manufacture of woolen socks to their original lines of men's wool underwear.

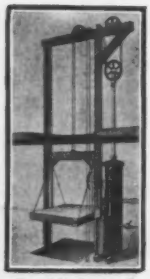
TETRAZO COLORS
FOR COTTON

We offer these products in all shades for the dyeing of cotton in any form. Among them will be found colors specially adapted to meet the various requirements of fastness to light, washing, cross dyeing and fulling.
Shade cards and samples, with full information, cheerfully furnished on application.

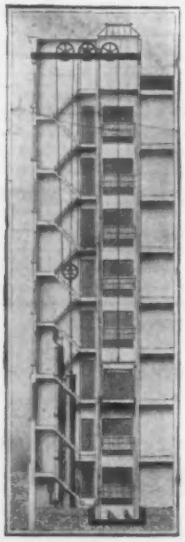
AMERICAN DYEWOOD COMPANY
NEW YORK PHILADELPHIA BOSTON HAMILTON, ONT.

Direct Acting

Over 1000 in Daily Use



Double Geared



Steam Hydraulic Elevator in a Great Soap Factory in Jersey City

Paint, Powder and Pickles

Suggests what you see on the Avenue when you go to town.

But that is not what this advertisement is about.

Paint

The Sherwin-Williams & Co., Cleveland, Ohio, are the Greatest Paint Makers on earth. Also Greatest Advertisers, "We Paint the Earth."

Big Concerns must have Big Engineers? Sure! Well, Sherwin-Williams & Co. have

Hook'd 'er to the Biler

Why?

Powder

The E. I. DuPont de Nemours Powder Co., Wilmington, Del., are the Greatest Powder Makers on earth. Also don't advertise at all to speak of. Don't have to.

Big Concerns must have Big Engineers? Sure! Well, The DuPont Powder Co. have

Hook'd 'er to the Biler

Why?

Pickles

The H. J. Heinz Co., 57 Varieties, Pittsburg, Pa., are the Greatest Pickle, etc., Makers on earth. Also Greatest of Advertisers.

Big Concerns must have Big Engineers? Sure! Well, The H. J. Heinz Co. are

Hookin' 'er to the Biler

Why?

Say, old fellow, **wake up, color up, bang up** and **ketch up** with the other fellows next to the band and find out what they are playing when they strike up

Hook 'er to the Biler

CRAIG RIDGWAY & SON CO., Coatesville, Pa.

Elevator Makers to Folks Who Know

BLEACHERS!

If you don't know modern bleaching
You are not an expert bleacher.

You are like an old kettle; serviceable until something better is found for which the Office is on the lookout.

Ever hear of Peroxide Bleaching?

Of course. But do you know that it can be applied to your goods and what it will do to them, and at what cost?

For free "Correspondence Course" on Peroxide Bleaching apply to

THE ROESSLER & HASSLACHER CHEMICAL CO.

NEW YORK, N. Y.

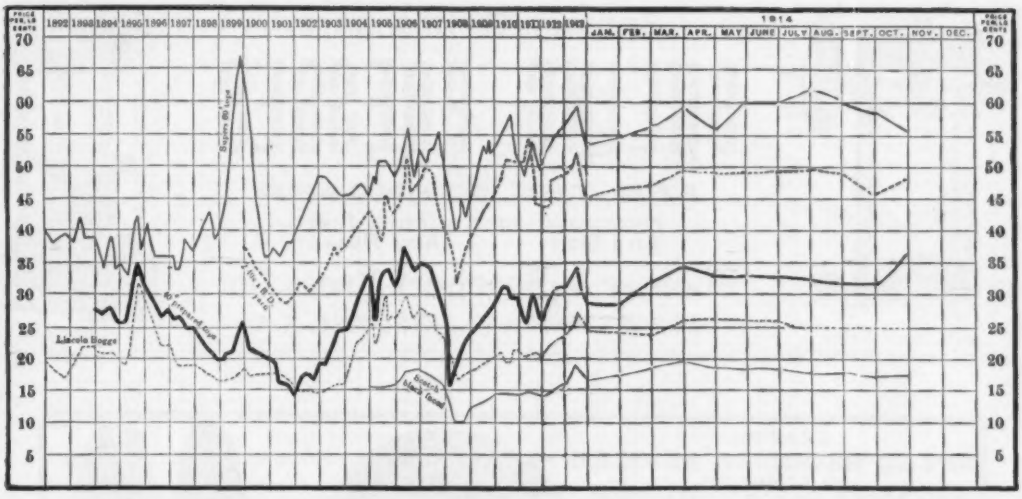


CHART SHOWING COURSE OF PRICES FOR WOOL, TOPS, AND WORSTED YARN AT BRADFORD, ENGLAND

THE BRADFORD MARKET

Bradford, Eng., Oct. 25, 1914.

The prohibition placed by the British Government upon the export of unspun wool has not had the effect of depressing prices. Its manifest purpose is to reserve for the Allies a sufficiency of wools suitable for army clothing, for although the embargo is laid upon all forms of wool, licenses are procurable to export merino to approved destinations. The demand for army clothing rules the situation and this market is an excellent one for the sale of New Zealand and South American crossbreds. Slipes and locks and pieces are wanted by the carded woolen trade, coarse crossbreds of the preparing class by the worsted trade and finer crossbreds for knit goods. The supply is short and prices are rising and likely to rise.

A month ago consumers were of the opinion that 64s might fall to 42 cents; being some 22 cents below the highest level. This quality is, however, at 58 cents still, having appreciated after a fall. The consumption of merino is so heavily reduced that a decline seems inevitable before Christmas, but until the arrival of the new clip firmness is to be expected.

All dark colored wools like Persian brown, Spanish and alpaca are wanted for the sake of their natural coloring as well as for their strength. Demand does not run strongly on lusters like Lincolns and Leicesters, but for Shropshires and North wools there is an insatiable demand.

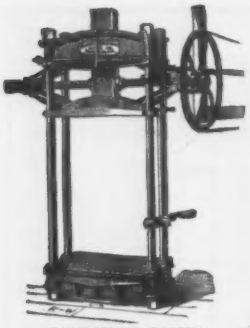
The tremendous run upon khaki has disturbed the civilian trade in more ways than one, for it has forced up prices to heights to which the regular market has not yet accommodated itself. The flannel mills are powerless to deliver anything to the regular trade for the next six months. The blanket makers are full certainly for three months and upon their account there is a very lively demand for woolen rags.. The normal trade in worsteds has so long been slack that demand for quantities can be expected from the home market before the khaki boom expires.

WOOLEN MILL NEWS

*Kentucky, Louisville. Five to forty cut woolen and merino yarns are being manufactured by the Sterling Spinning Co., Inc., at 1361 So. 15th St. This new concern was organized a few months ago by George Dunham, at one time superintendent of the Falls City Woolen Mills, of Louisville. The company has capital stock of $25,000. Mr. Dunham is president and buyer and M. J. Brock is treasurer. Manufacturing was started about September 1 with two sets of 60-inch cards and 1,224 spindles operated by electric power.

*Massachusetts, Holyoke. Operations have been begun in the new worsted weaving plant of H. J. Beebe, Jr. Mr. Beebe took some of the looms out of the old Beebe-Webber plant and installed them in the mill of D. Mackintosh & Sons Company, where he is weaving serges and fancy worsteds for men's and women's wear on 42 looms under the name of the Holyoke Worsted Mills. All dyeing and finishing is done outside.

Massachusetts, Monson. Henry W. Lancy, formerly superintendent of the Somerset Woolen Company, and Charles D. Rood, of Springfield, who purchased the plant at the recent sale, are reported to be making preparations to start up the mill, which contains 4 sets of cards and 25 looms.



KNUCKLE JOINT

Boomer & Boschert

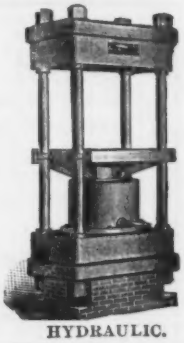
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size Any Power

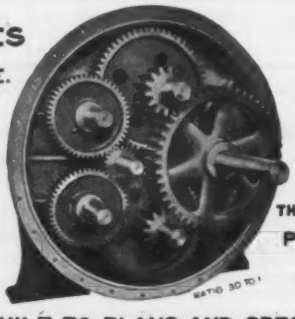
Boomer & Boschert Press Co.

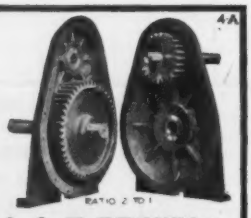
338 WEST WATER ST., SYRACUSE, N. Y.



HYDRAULIC.

GEARED
SPEED REDUCING DEVICES
TO CONNECT
HIGH SPEED MOTOR TO MACHINE.
GEARS RUN IN OIL. CASES DUSTPROOF
OTHER TYPES





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THE A. & F. BROWN CO.
POWER TRANSMISSION
MACHINERY
79 BARCLAY STREET
NEW YORK

SPECIAL MACHINERY BUILT TO PLANS AND SPECIFICATIONS

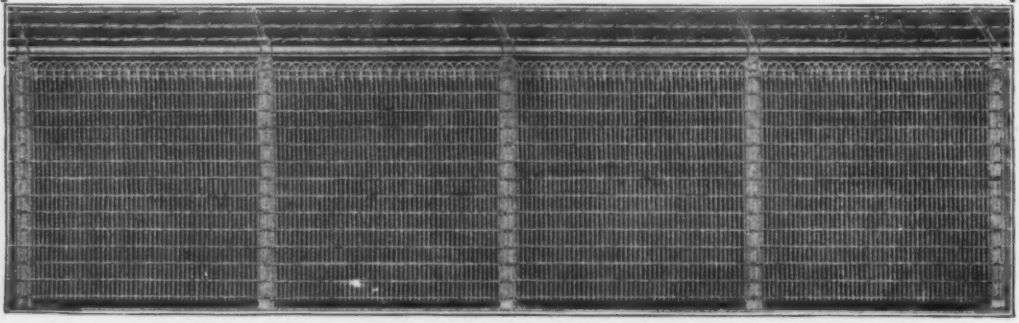
SENT FREE **A complete Catalog of all Textile Books** in the English language on textile subjects that are in print and that are of present value, classified under the different subjects to which they pertain. This catalog should be in the possession of every mill man. We can supply any textile or technical book, whether of our own publication or not, at lowest prices.
LORD & NAGLE CO., Boston, Mass., Publishers of the Textile World Record.

FACTORY PROTECTION FENCE

Lasts Longer—Looks Better—Costs Less Than Wood

Old Colony Foundry & Fence Co.

43 West Street, Send for Catalog K Boston, Mass.



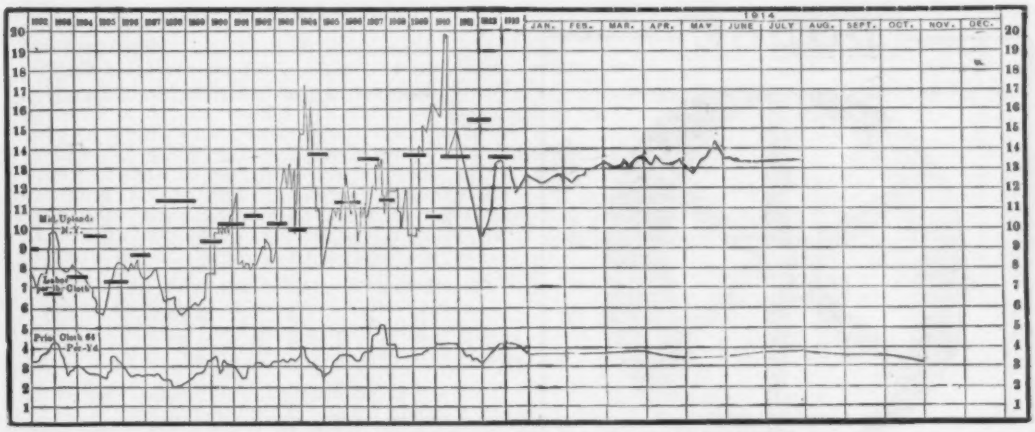


CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

THE COTTON MARKET

The price of spot cotton on November 1 is 5d (10 cents) at Liverpool and from 6 1/2 to 7 cents at the principal cotton markets in the South. The movement into sight from August 1 to October 30 is reported by the "Chronicle" for 1913 and 1914 as follows:

Year	Bales
1913	2,893,081
1914	5,101,246

Estimates of the size of the new crop have been lowered slightly owing to unfavorable weather reports, but with the embargo on exports still unrelieved a reduction of 500,000 bales to 15,500,000 is a small matter. The "Chronicle" estimates the world's visible supply on Oct. 30 at 3,748,270 bales, as compared with 4,347,632 bales on the corresponding date in 1913, 4,443,538 bales in 1912 and 3,697,725 bales in 1911.

There is talk of opening the exchanges, but this action depends on a number of contingencies. Hopes of a clearing of the situation have been strengthened by the businesslike conferences between the U. S. Treasury officials and representatives of the British Government.

COTTON.

.....

New Mills.

*Georgia, La Grange. Stock in the proposed new cotton mill, headed by Fuller E. Callaway and C. V. Truitt has been oversubscribed and some of the applicants will be disappointed if the original intention of limiting the capital stock to $500,000 is followed. In allotting the stock preference will be given to local people and practically four-fifths of the ownership will be held by home investors. As noted in a previous report, they prefer not to publish details as to the product. The new plant will be a specialty mill and will follow up trade outlets developed in the experience of Messrs. Callaway and Truitt in operating the five other mills included in their organization. Some export trade will be gone after and Mr. Callaway recently completed an extended trip abroad for the purpose of visiting mills and investigating conditions. The Park A. Dallis Company, of Atlanta, are preparing the plans and specifications and it is understood the equipment will include over 20,000 spindles.

.....

Enlargements and Improvements.

*Aabama, Athens. In addition to overhauling its spinning department the Fulton Cotton Mill Company is equipping a duck weaving department and will begin the weaving of eight to twelve ounce army duck about December 15. W. P. Hurt, formerly with the Magnolia Mills of Charlotte, N. C., has succeeded R. S. McGill and W. F. Dellinger, manager and superintendent, respectively, both of these men having resigned. The weaving department will contain 238 looms.

*Connecticut, Killingly. New machinery ordered by the Killingly Mfg. Company, which will be largely delivered during the present month, includes 1 picker, 19 cards, 8 speeders, 4,632 spindles, 2 spoolers, 4 warpers and 14 60-inch looms. Tire fabrics are manufactured.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES

Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.

DODGE

Solid Single Arm Pulley

Machine Moulded Cast Iron Pulleys for Textile Service

AS the largest manufacturers of pulleys in the world, we are in a position to meet all requirements in textile service.

The Dodge line embraces both wood and iron, the latter in both solid and split patterns.

Our solid cast iron pulley, machine moulded, is designed and made to the best of our 31 years experience. It will withstand any ordinary strain under which the average textile belt is expected to operate.

Hollow head set screws are used exclusively for holding this pulley upon the shaft, the old style set screw having been abandoned in the interest of safety.

We can make anything in iron pulleys that you may require. The sizes generally used are carried in stock. Write for price list. We feel sure we can please you in Dodge goods and service.

Dodge Manufacturing Company

Power Transmission Machinery

Mishawaka, Indiana

Branches and Agencies in All Principal Cities

COTTON MILL NEWS

New Hampshire, Manchester. Plans have not been entirely completed for the projected increase in the bag department of the Amoskeag Mfg. Company. The development will be in the form of a remodeling and increasing of the present bag mill, bringing it up to greater efficiency and providing space for new equipment to largely increase the output. Preliminary construction work has been started by the engineering department of the Amoskeag Company. The location of the bag department is just north of the McGregor Bridge.

*North Carolina, Albemarle. No. 1 Mill of the Wiscassett Mills Company is shut down to facilitate the installation of machinery in the new addition which has just been built. The spinning department will be located in the new space and new cards are to be installed in the space vacated by the spinning frame. This will remove the necessity for night work in the carding department. Improvements in the power department were recently made.

*North Carolina, Bessemer City. A satisfactory title has been secured by the Gambrill & Melville Mills Co., of Havre de Grace, Md., to the Harborough Mills property and the plant has been transferred to the new owners. It was noted in a previous report that extensive changes and improvements would be made before the plant was started up and new machinery is to be built at once and installed as soon as possible. They do not know when they will be able to start operations as they intend putting the entire property in first-class condition before making a start.

North Carolina, Greensboro. Preparations are being made by the Revolution Cotton Mills to build ten warehouses with a capacity of 6,000 bales of cotton. Previous reports have detailed the extensive enlargements now under way which will add 130 cards, 40,000 spindles and 1,132 looms to the capacity of the mills.

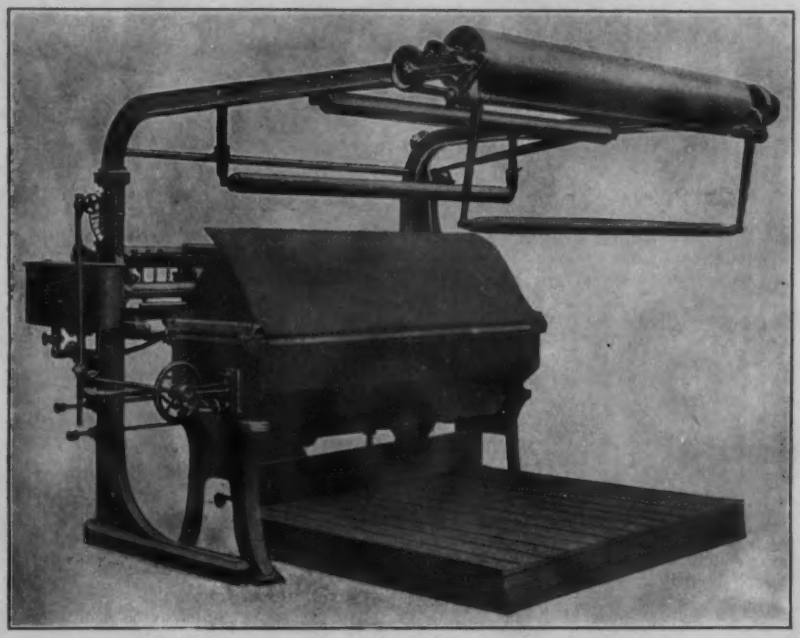
*North Carolina, High Point. Thirty-two new automatic looms and 1,024 new spindles comprise the additional equipment ordered by the Pickett Cotton Mills. Nothing definite has been decided regarding the 30,000-spindle addition under contemplation for several months and probably no decision will be reached in this matter in the immediate future. R. L. Steele is president; F. M. Pickett, treasurer; and John F. Scott, superintendent and buyer.

North Carolina, Kannapolis. The installation of 10,000 additional spindles in the new mill of the Patterson Mfg. Company has been completed The new mill is equipped with electric power and including equipment, represents an investment of between $150,000 and $200,000.

North Carolina, Kannapolis. The Cannon Mfg. Company has had plans prepared for an addition to the card room of No. 1 mill, 100 by 30 feet. Construction work will be started at once.

North Carolina, Lexington. Four new spinning frames equipped with individual motors have been set up and are in operation in the Dacotah Cotton Mills. Four more frames will be started as soon as they are received and can be erected.

Dewing, Conditioning
and
Shrinking Machine
for
WORSTEDS and WOOLENS



A. W. BUHLMANN
Textile Engineer
200 FIFTH AVENUE - NEW YORK

MERCERIZED YARNS

Dyers, Bleachers, Gassers

Dyers of Colors Fast to

SUN AND BLEACHING

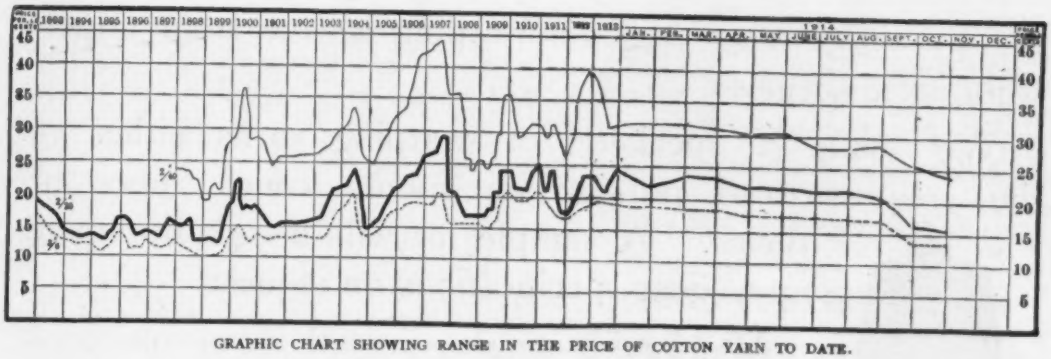
Aberfoyle Manufacturing Company

CHESTER, PA.

310 Lafayette Building
Philadelphia

746 Insurance Exchange
Chicago

Yarn Department



GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

THE COTTON YARN MARKET

The month of October ended with yarn prices the lowest they have been in more than a decade and with values still on an uncertain basis. With the low prices prevailing many manufacturers are not inclined to place business unless it is for the purpose of covering contracts they have received for their goods. In some instances manufacturers who are financially able to do so have placed contracts for four or five months ahead on a basis of 15 cents for 2/20s and 17 1/2 cents for 2/30s. The demand for textile fabrics has not been strong enough, however, to create sufficient confidence for manufacturers to take chances of ordering large quantities of yarn.

The prevailing opinion in the manufacturing trade is that there is no reason why they should not be running all their machinery. They are looking forward with confidence to the time when this will be the case, but as conditions exist today there is probably not over 60 to 65 per cent. of the textile machinery in the Philadelphia districts in operation.

The upholstery business is extremely dull, while some men's wear mills are busy, but these are exceptions. There has been a good demand for certain grades of dress goods, but at the present time even this seems to have eased up, while some other lines of dress goods have not sold at all. The carpet business continues slow. Manufacturers of Turkish towels and Terry fabrics are busy, but even in this line there has also been an easing up in the demand. Tapes and narrow fabrics, however, are in very good demand, with a very few manufacturers running their plants to their fullest capacity.

Eastern Cops

6s	15¼
8s	15¾
10s	16¼
14s	16¼
16s	17¼
18s	17¾
20s	18¼
22s	18¾
24s	19¼
26s	19¾
30s	20¾
34s	20
36s	24
40s	25

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler

12s	17
14s	17½
18s	18½
20s	14
24s	20½
26s	21½
30s	22½
36s	30
40s	32
45s	36
50s	39
55s	40½
60s	45½

Eastern Two-Ply Warps, Carded Peeler

2/30s	23
2/36s	30
2/40s	32
2/45s	36
2/50s	39
2/60s	47

Broad Silk and Ribbon Manufacturers

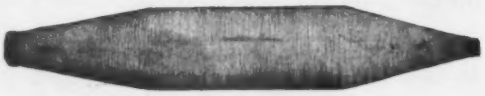
cannot obtain their maximum production unless the 2 or 3 ply Pure Silk Yarn used for warping is free from imperfections and true to size.

We make a specialty of warping yarns either in the grey or dyed, put up on spools, cones, tubes or skeins. A sample lot will be gladly made up to your specifications on request.

We make singles in all sizes on cops in the grey. Do you want to see samples?

Nonotuck Silk Company

CORTICELLI SILK MILLS
Established 1838
SPUN SILK YARNS
Florence, Mass.



THE J. R. MONTGOMERY CO.

Windsor Locks, - Conn.

MANUFACTURERS OF

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools, Tubes and Cones. In Fancy Twist, Colors and Printed.

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

MONUMENT MILLS, HOUSATONIC, MASS.

HIGH GRADE COTTON YARNS White, Colors, Bleached
On Beams, Jack-Spools, Cones, Skeins and Chain Warps
FAST-BLACKS & COLORS | For Woolen Mills a Specialty | WE SELL DIRECT

PRESS PAPER
HIGHEST GRADE
BEST VALUE
Mills
RAINBOW, CONN.

JACQUARD CARDS

THE MERWIN PAPER CO

SPECIALTIES
FOR ALL PURPOSES
Inquiries Solicited
Address
HARTFORD, CONN.

THE PHILADELPHIA MARKET

7s and coarser	14½
8s and 9s	14¾
10s	15
12s	15½
14s	16
16s	16½
18s	17
20s	17½
22s	18
24s	18½
26s	19
30s	20
40s	25
50s	33

Southern high grade mule yarns:—

Cones

10s	17½
12s	18
14s	18½
16s	19
18s	19½
20s and 22s	20-21
24s	21½

Southern frame yarn, lower grades:—

6s and 8s	14
10s	14½

Eastern cones (high grade quality):—

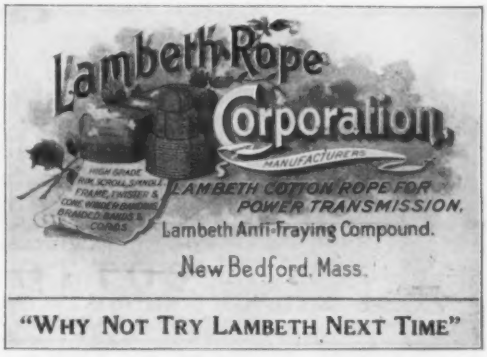
10s	18
12s	18½
14s	19
16s	19¾
18s	20¼
20s and 22s	20¾-22¼

Skein yarn (mostly Southern):—

4s and 8s soft	14
10s and 12s	14½
14s and 20s	15-16
22s	16
10/2	14½
16/2	15
20/2	15½
30/2	18
40/2	24
8/2	14½
7/6	14½

Southern warps:—

10/1	14
14/1	14
16/1	14½
20/1	15
22/1	15½
26/1	16½
30/1	17½
8/2	14
12/2	14½
14/2	14½
16/2	15
20/2	15-16
26/2	17
30/2	18
40/2	24
50/2	33



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Cotton Yarns
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Providence, Chicago, Philadelphia, New York

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530 BROADWAY, NEW YORK
MERCERIZED GLAZED GASSED } COTTON YARNS

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Manufacturers of
Twines, Threads and Yarns
Jacquard Harness Twines of all kinds on hand and made to order
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COMMISSION MERCHANTS
COTTON YARNS
122-124 Chestnut Street, - - - Philadelphia, Pa.
Brown Building, 185 Summer Street, - Boston, Mass.

Reels for Cotton WOOLEN AND WORSTED
Patented Hosiery Winders, Cop Winders and Spoolers
LINDSAY, HYDE & CO.,
2124 to 2130 E. York St., PHILADELPHIA, PA.

SOAPS HIGH GRADE SOAPS
Bleaching, Fulling and Scouring SOAPS
Red Oil and Olive Oil Crown Soaps
J. O. Draper Co. Est. 1860 Pawtucket, R. I.

S. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS

FITCHBURG, MASS.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cotton, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING COMPANY

PAWTUCKET, RHODE ISLAND

COTTON YARNS

CARDED and COMBED, in Nos. 10 to 120, from PEELER EGYPTIAN and SEA ISLAND COTTONS
MERCERIZED YARNS, IN SINGLE OR PLY, A SPECIALTY

Industrial Tape Mills Co.

Jasper and Huntingdon Sts. Phila., Pa.

Manufacturers of

NARROW FABRICS

SPOOL TAPES. STAY BINDINGS AND BRAIDS

Also Sole Manufacturers of

SAXON

New Guaranteed Non-Shrinkable Tape

LINDSAY THOMPSON & CO., LTD.

FLAX SPINNERS BELFAST, IRELAND

Linen Weaving and Knitting Yarns

LINEN THREADS OF EVERY DESCRIPTION

T. J. PORTER & SONS *Selling Agents,* Philadelphia

Large Stocks
Quick Delivery

Knitting and Weaving YARNS

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

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926 CHESTNUT STREET

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F. W. MAURER & SONS CO.

MANUFACTURERS OF

Fringes, Tapes, Bindings & Narrow Fabrics

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Lowell Crayons Meet the requirements of any cotton, woolen or worsted mill.

May we send samples? 15 colors and white

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Makes stencils in half a minute, at reduced cost of 1-10 cent each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.

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Also manufacturers of Oil Stencil Board. Write for prices and samples.

101 Beekman St.
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HUGHES FAWCETT

115 and 117 Franklin St., New York

Linen Weaving and Knitting Yarns

Linen Jacquard Harness Twines

And Linen Yarns and Threads for every purpose

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LARGE STOCK PROMPT DELIVERIES

Established 1844

BENJ. BUCKLEY'S SON

(WM. J. BUCKLEY) *Gun Mill, Paterson, N. J.*

Manufacturer of all kinds of SPINDLES, FLYERS, RINGS, TUBES, CAPS, etc., for Cotton, Silk, Flax, Woolen and Worsted Machinery.

Roving Spindles and Flyers a Specialty. Light Forgings.

REPAIRING OF ALL KINDS

The Ramie Agency

Manufacturers' Agents

New York

Ramie Yarns and Threads

HAVE REMOVED

TO NEW AND LARGER QUARTERS AT

432 FOURTH AVE. Corner of 29th St.

THE LINEN YARN MARKET

Reports from Belfast have it that all prices which were quoted last month are withdrawn and only individual inquiries are being dealt with according to circumstances. Spinners are refusing to book orders ahead and the stocks are very small. Tow yarns have advanced still further in price and 25s tow weft, which two months ago would have brought 5/6 per bundle is now being quoted on the basis of 9 shillings, which brings it to a higher price than quoted during any period during the civil war in America. All the heavy tow yarns are being taken over for government work and canvas is at an exceedingly high premium. Importations of both Belgium and French yarns have been very large, but even larger quantities than these have had short shrift as it was impossible for the steamers to arrive at Ghent and sail from the same port without considerable risk. The German government prohibited shipments of yarns from Ghent to Ireland. One steamer with a large quantity of flax left Ghent recently and it is not known where she is as she had to complete her cargo from barges at the mouth of the canal and ran considerable risk in doing so. Spinners refuse to book orders until their old contracts are completed. New orders that may be taken are at an extremely high figure. As a consequence of this yarn agents in America are cautious regarding accepting orders for future deliveries and are dealing only with such yarns as they have in stock for immediate delivery. Their stocks on this side are almost nil with deliveries from Belfast being few and far between.

The mills in Belfast are working only so far as they are able to get their workers to remain at their machines, the government having practically suspended the labor acts so as to enable the mills to fill the government contracts which are far beyond anything that they have hitherto had. From patriotism alone the manufacturers feel that they should take care of the government requirements rather than their ordinary trade.

("A" Quality)

35s Lea on cones	83-90
50s Lea on cones	96
60s Lea on cones	1.00
80s Lea on cones	1.00
90s Lea on cones	1.10-1.15
100s Lea on cones	1.15-1.20
110s Lea on cones	1.30-1.40
120s Lea on cones	1.70

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RAMIE YARNS
In all numbers for
Knitting, Weaving and Laces
Manufacturers
Erste Deutsche Ramie Gesellschaft
Emmendingen, Germany
Sole Agents
PFALTZ & BAUER, Inc.
Importers
300 PEARL STREET
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THE DEPENDABLE
GOLD STAMPS
SKETCHES AND SAMPLES ON REQUEST
MEYERCORD CO. PHILADELPHIA & CHICAGO.

Walter W. Hodgson
Card Stamping and Repeating
FOR ALL TEXTILE FABRICS
Also Repeating for Throw Overs for Fine and French Index
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oil, grease and other mill stains quickly and permanently removed by the Sanitex Process. Machines installed in Textile and Knitting Mills, or Spotting done for the trade at reasonable rates.
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INDIA ALKALI WORKS, - BOSTON

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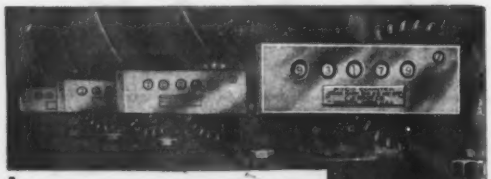

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COUNTING THE YARDS ON
BRAIDING MACHINES
This shows but one of innumerable ways in which our Counters can be used for accurately measuring and counting the production of a machine
We have a variety of Counters for textile mill uses
Ask for "Catalog 18"
THE C. J. ROOT COMPANY
100 MILTON STREET, BRISTOL, CONN.

COTTON MILL NEWS

*Georgia, Lindale. Four hundred and forty automatic looms are being installed in the Massachusetts Mills in Georgia instead of 40 looms as stated in current reports. This new equipment takes the place of old style plain looms.

*Georgia, West Point. The installation of new cards, drawing and roving frames in the Lanett Cotton Mills is proceeding. The contract for this equipment was awarded some time ago as noted.

*Illinois, Kankakee. The new 8-story building, 50 by 145 feet, to be built by the Paramount Knitting Company, will be used as a storehouse for raw cotton. The new building will be of concrete construction.

*Massachusetts, Adams. The cotton waste and bag mill project of the Berkshire Cotton Mfg. Company has not reached the stage where plans can be published. Reports which have appeared are said by them to be premature and distorted. It was reported locally that plans had been prepared for a large new mill and a new storehouse which would provide space for about 400 additional looms and other equipment to utilize the waste in the manufacture of bagging.

Massachusetts Fall River. At the annual meeting of the Hargraves Mills, Seth A. Borden, treasurer, it was stated that the directors are trying to put the equipment on a level with the machinery in more modern mills.

*Massachusetts, Millbury. Construction work has practically been completed on the new building for the Cordis Mill and the equipment is being rearranged and new machinery installed. The building is being wired for electric lights.

Massachusetts, New Bedford. It is reported the Kilburn Mill will build a weave shed on land recently purchased from the City. At present fine all combed cotton yarns, 30 to 120s, are manufactured on 120,000 ring spindles. H. L. Tiffany is treasurer, and E. G. Shepherd, superintendent.

*Massachusetts, Salem. The new weave shed the first of the mills of the Naumkeag Steam Cotton Company to be rebuilt, is approaching completion and will be ready for machinery within a few weeks. Preliminary work is being done toward the construction of other buildings, although it is not expected that construction work will be started before next spring.

Account for EVERY Labor Minute

Here is the one logical method of keeping an accurate account of when you receive and when you send out letters, orders, contracts, jobs, etc. It will avoid all disputes, as it records every minute of the day or night.

FOLLETT'S
New Model Time Stamp
Absolutely automatic, requires no attention, and is the only POSITIVELY ACCURATE register on the market.
Send for Catalogue T.
FOLLETT TIME RECORDING COMPANY
679 Hudson Street NEW YORK CITY

Practical Christmas Gifts

No present that you can select will give so much benefit and profit as a good textile book or magazine. ¶Nothing will appeal more strongly to the man who has been in the mill a lifetime, or to the young man just starting out. ¶We will send books or magazines direct to anyone you want them sent to, without further charge, and with a note expressing your compliments.

Some Suitable Books

Cotton Manual. *Broadbent*	$0.75
Weaving—Plain and Fancy. *Nelson*	1.25
Jacquard Mechanism. *Bradbury*	4.00
Cotton Combing Machines. *Thornley*	3.00
Mercerization. (2 vols.)	7.50
Simplex Tables	.50
Textile Fibres. *Matthews*	4.00
Study of Textile Design. *Barker*	2.50
Worsted Spinning. *Priestman*	2.50
Worsted Handbook. *Buckley*	.50
Bleaching and Finishing of Cotton *Trotman and Thorp*	5.00
Chemistry and Practice of Sizing ..... *Bean and Scarisbrick*	8.00
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Textile Printing. *Knecht and Fothergill*	10.50
Manual of Cloth Finishing (Wool)	6.50
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Carpet Manufacture. *Bradbury*	3.00
Bleaching and Dyeing Vegetable Materials. *Hubner*	5.00
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Cotton Spinning (3 vols.) *Taggart*	7.50
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Space for names and addresses is provided below.

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(Signed) .....

Lord & Nagle Company, Publishers, Boston, Mass.

SMITH & FURBUSH MACHINE CO.

PHILADELPHIA

Manufacturers of

PICKERS—Lumpers; Rag, Burr, Wool, Cotton, Jute, Fearnaught and Garnett Pickers; also Rag, Carpet and Jute Shredders.

WILLOWS—Continuous Cotton Stock Opening, Cleaning, Metal Extracting and Condensing Outfit; also Square Box and Cone Willows or Dusters.

GARNETT MACHINES—For carding cotton and woolen waste clippings, etc.; also for manufacturing cotton, wool and jute batting or felts.

FEEDS—Self feeds for cotton, wool, worsted or jute; also Camel Backs, Blamires and Apperlys.

METALLIC BREASTS—Burring Machines and Self-Stripping Feed Rolls for Cards and Garnett Machines.

RECLAIMING MACHINE—For Opening and Cleaning various kinds of Cotton Mill Waste.

CARDS—Woolen, Worsted, Cotton Waste, Shoddy, Hair and Jute Cards; also Special Cards for the manufacture of Wool Hats.

MULES—Heavy and Durable for Wool and Waste Yarn.

TWISTERS—Plain or Fancy Twisters for Flake, Loop or Bourette Yarn.

BOBBIN WINDERS—Automatic Jack Bobbin Builder and Adjustable Creel for different length spools.

WARPING MACHINERY—Copper Cylinder Warp Dressers with single and double size pans; beamers; Section and Pinless Warp Mills, Creels and Dresser Spoolers for Wool or Worsted.

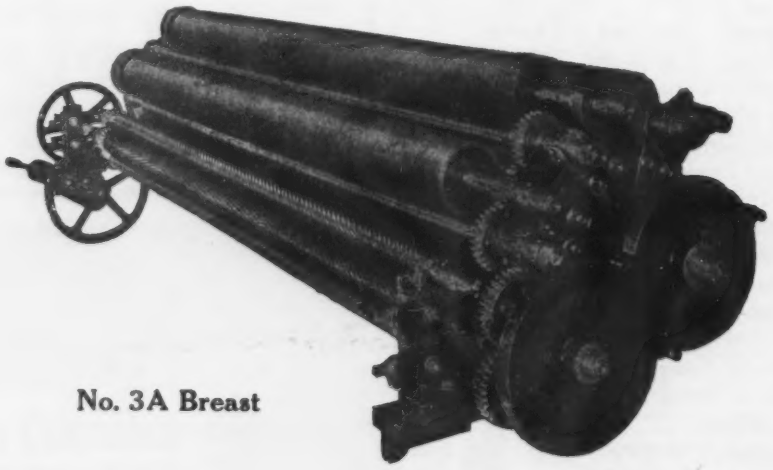
GRINDERS, Etc.—Floor, Traverse and Portable Grinders for Cards, Garnetts or Rag Pickers; also Turning Rests, Fillet Winders, Card Clothing Stretchers and Cleaning Frames.

Special Circulars furnished for each Machine

Felting Machinery for Manufacturing Soft Felts or Commercial Batts, for Mattresses, Comforts, etc. from Cotton Waste, Linters, Jute, Wool and Wool Waste

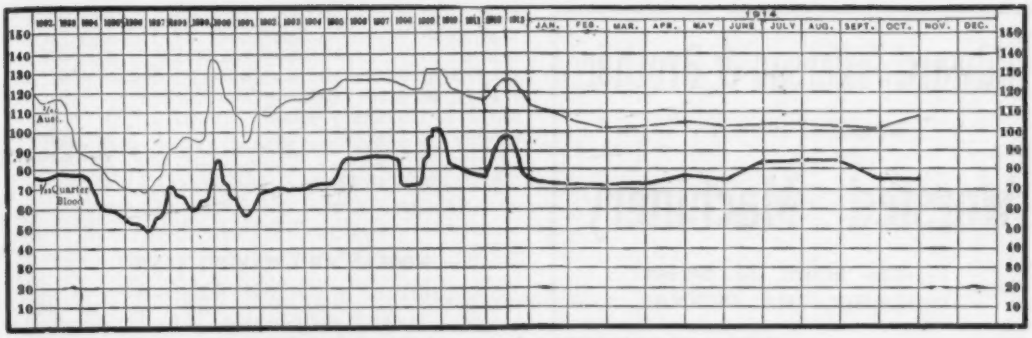
A complete line of Machinery for Manufacturing Gunny Bagging from Old Gunny Bagging
Complete Equipment for Manufacturing Mop Yarn and Rope from Cotton Waste

Estimates and complete plans furnished



No. 3A Breast

The application of Garnett Breasts to your Cards will greatly improve your production. We have just completed a line of Breasts of new design. They embody a large number of improved features.



GRAPHIC CHART SHOWING RANGE IN PRICE OF WORSTED YARN.

WOOLEN AND WORSTED YARN MARKET

The tide for better business in so far as the worsted spinner is concerned seems to have turned to his benefit. The past week or ten days has seen a decided advance in quarter-blood yarns for the sweater trade and indications point to a still further advance. Fine wools, however, while remaining firm have not increased in price. The tremendous demand for sweater coats for export, as well as for the wool itself, together with the embargo on wools from abroad has caused the higher prices. Many knitting mills in this country have already received large orders for sweaters, underwear and hosiery from foreign sources with others yet to be placed. To meet the orders for these goods the spinners are busy on yarns of all classes and the probabilities are that if this condition continues for two or three weeks it may be impossible to secure deliveries on certain yarns for several months to come. The sweater trade has not as yet begun to take orders for next year but many of the manufacturers look forward to a good season.

The weavers are fairly busy, but business from this trade is inclined to be spotty. In some cases mills may be found busy on men's wear. Others are found with comparatively few orders ahead and working more or less on a hand to mouth basis.

The hosiery and underwear trade is finishing up their 1914 business and waiting for duplicate orders to come in, making ready for their 1915 deliveries.

BRADFORD SPUN YARN

2/12 to 2/16 low common	55-57½
2/20 to 2/24 low 1/4	60-62½
2/20 to 2/25 1/4 blood	65-67½
2/26 to 2/28 1/4 blood	70-72½
2/32 1/4 blood	75-77½
2/20 3/8 blood	77½-80
2/26 3/8 blood	80-82½
2/32 3/8 blood	80-82½
2/36 3/8 blood	80-82½
2/40 1/2 blood	95-97½
2/40 delaine	1.00-1.02
2/50 delaine	1.07½-1.10
2/40 Australian	1.07½-1.10
2/50 Australian	1.12½-1.17½
2/60 Australian	1.25-1.27½
3/30 and 3/32 luster	95-97½
3/36 luster	1.10-1.12½

KNITTING YARNS

Dyed and Bleached—Bradford System

2/7s straight 1/4 blood	82½-85
2 and 3 ply 10s-15s straight 1/4 blood	80-82½
2 and 3 ply 16s-20s straight 1/4 blood	82½-85
2 and 3 ply 20s-24s straight 1/4 blood	85-87½
2 and 3 ply 24s-28s straight 1/4 blood	87½

(Reduce 7½c. for yarn in oil)

FRENCH SPUN YARN

1/20 1/4 blood	75
1/20 high 1/4	77½
1/20 3/8	80
1/20 high 3/8	85-87½
1/20 1/2 blood	90
1/30 1/2 blood	92
1/40 1/2 blood	92½-95
1/50 delaine	1.02½-1.05
1/40 Australian	97½-1.00
1/50 Australian	1.07½-1.10
1/60 Australian	1.17½-1.22½
1/70 Australian	1.25-1.27½

For two ply knitting twist add 5c. additional to above prices.

For two ply weaving yarns add 7 1/2c. additional to above prices.

FRENCH SPUN MERINO YARNS—FINE ONE-HALF BLOODS

Standard Grade

1/20 50/50 White Merino Cop	65
1/30 50/50 White Merino Cop	67
1/40 50/50 White Merino Cop	70
1/20 60/40 White Merino Cop	70
1/30 60/40 White Merino Cop	75
1/40 60/40 White Merino Cop	80
1/20 70/30 White Merino Cop	75

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COTTON and WORSTED YARNS
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MINERVA MILLS
Spinners of WORSTED YARNS
For Weaving and Knitting
In the Grey and in all colors and mixtures
Philadelphia Office: 627-29 Bourse Bldg.
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Imported Worsted Yarns
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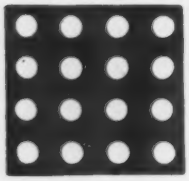
Bradford Spun Yarns
Woolen Yarns
FOR WEAVING AND KNITTING



Perforated Plates for Wool Washing
Rinsing and Carbonizing
In Special Metal
BECKLEY PERFORATING CO.,
Garwood, N. J.

1/30	70/30 White Merino Cop		77
1/40	70/30 White Merino Cop		79
1/20	80/20 White Merino Cop		80
1/30	80/20 White Merino Cop		82
1/40	80/20 White Merino Cop		84
Sliver and Sanitary Mixes			3c. more
Coning on 1/20			2c. more
Coning on 1/30			3c. more
Coning on 1/40			4c. more

WOOLEN AND MERINO YARNS

Some portions of the trade using woolen yarns, having completed their season, have discontinued buying yarns with a consequence that while the spinner is receiving some business it is only for small amounts and for immediate delivery. This condition, however, seems to be to his taste because he is inclined not to sell much of his product and the consumer will not place orders for future delivery. The sweater trade is now making up its samples for next year and should cold weather set in there is no doubt that a good portion of business will be received by both the knitter and the spinner alike. Prices today remain the same, but spinners state that they do not know what they will be within a few weeks, as crossbred wools have been advancing rapidly of late, which has had a tendency to stiffen prices. Another feature of the market is the fact that many orders are reported as being placed for export with the sweater trade.. These orders call for goods made up of 2/8 to 2/23 cut yarns in oxfords and colors. Should this business be as large as anticipated, there is a probability that both the spinner and the knitter will be quite busy for two or three months to come. Regarding the dyeing situation it is reported that this end of the business has eased off to some extent and colors can be secured as wanted.

WOOLEN AND MERINO YARNS

Immediate delivery seems to be the slogan of the spinners of woolen and merino yarns at this time. Some little business is being done, but conditions are such that they are afraid to sell much yarn ahead while the consuming end not being in a position to foresee into the future.

WOOLEN AND MERINO YARNS

2/20	Light Grey Mixed	80%	20%	52-55
2/20	Light Grey Mixed	90%	10%	57½-60
2/20	Light Grey All Wool			62½
2/20	Colored All Wool			60-62½
2/20	Bleached	80%	20%	65
2/20	Bleached	90%	10%	67½
2/20	Bleached All Wool			72½
2/23	Colored All Wool			62½-65

2/23 Bleached 90/10	67½-70
2/23 Bleached All Wool	72½-75
2/25 Light Grey Mixed All Wool	80-82½
2/25 Bleached All Wool	85-87½

THE RAG AND SHODDY MARKET

The market for rags is strong at advanced prices owing to the demand from abroad. Quotations have advanced in certain grades from 2 to 3 cents a pound and large orders have been placed at the higher prices. The scarcity of wool suitable for army cloths has created a strong demand for wool rags. This demand will probably continue to improve unless there is an unexpected end of the war in Europe. A considerable quantity of stock of various kinds has changed hands on speculation. Domestic spinners are buying in small quantities as trade in goods does not warrant operating for undeveloped requirements. Domestic shoddy manufacturers are not sharing in the activity that is in evidence in the rag market. Cloth manufacturers are buying from hand to mouth and some large orders for shoddy have been placed by contractors for army goods. Wool waste is dull with prices firm. The cotton waste market is demoralized by the conditions in the raw cotton trade.

SHODDIES AND EXTRACTS

White yarn, best all wool	45-55
White knit, all wool, best fine	30-36
White knit, No. 2	25-27½
Light yarn, shoddy, extra fine	30-35
New pure indigo blue	24-27

Merino

Fine light, all wool	22½-24
Medium light, all wool	15-17
Fine black, all wool	18-21
Fine dark, all wool, best grade	18
Medium dark, all wool, No. 2	14
Red knit stock, strictly all wool	18-20
Red flannel, all wool	17-19
Dark blue for hosiery, strictly all wool, No. 1	20-25
Dark blue for hosiery, not all wool, No. 2	15-18

NEW WOOLEN RAGS

Fine merchant tailors	7½
Choice light colors	8½
Browns	12
Blacks	6½
Blues	10
Fine dark	7-12
Medium dark	4-6½

Serges

Black	12-13
Blue	13-14

Flannels

Very light	19-20
Mixed	11½
Black	8-9

SOFTS AND KNIT STOCK

Soft woolens, best	4-5½
Old white flannels	12½
Old red flannels	9
Old blue flannels	3-5
Old plaids	3
White stockings	18
Clear dark hoods	7½-8½
Light hood stock	12-13

OTTO KUNZE
2542 Seventh Avenue, New York City
Our Specialty: Fibre Covered Shuttles Of Every Description
Samples sent on application

Woolen and Merino YARNS
Eaton Rapids Woolen Mills
EATON RAPIDS, MICHIGAN

BOSTON MASS. — BRADFORD ENG.
RICHARDS, ATKINSON & HASERICK
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TEXTILE MACHINERY
MILL SUPPLIES
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PHILADELPHIA OFFICE "THE ARCADE"

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Pettes & Randall Co., 150 Nassau St., New York

For Perfect and Economical Results in Speck Dyeing Worsted Piece Goods, use
CRYSTAL SPECK DYE
Covers all vegetable and other specks.
Does not stain white silk threads in goods.
Worden Chemical Works
4 Cedar Street, New York

Elliot Cloth Folder and Measurer
FOR PRINT WORKS GINGHAM AND COTTON MILLS, BLEACHERIES, ETC., ETC.
Send for circular.
Manufactured by
ELLIOTT & HALL, 54½ Hermon St., Worcester, Mass.

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When you buy Cheney Silk Yarns, you get yarns of the identical quality that we ourselves use in making Cheney Silks, the leadership of which is unquestioned.

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put you in a position to obtain the same perfection and popularity for *your* product that *we* have secured for Cheney Silks by the use of the *same yarns.*
Furnished in the gray or dyed; organzines and trams· doubles and singles; on spools, cones, warped or in the hank. Individual specifications solicited. Samples and quotations on request.

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are of superior quality, and include practically every kind of goods made of silk—whether for dresses, millinery, decoration or upholstery, the haberdasher or manufacturer, man or woman.

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National Silk Dyeing Co.

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NEW YORK SALESROOM, 60 UNIVERSITY PLACE

Skein Silk Dyeing of every description for every class of textile manufacture.

Hosiery Dye—Boil-off, weighting and dyeing, treated especially to meet the requirements of the hosiery and knitting trade.

Piece Dyeing and Finishing—All silk and silk mixed goods.

Printing—Surface and warp printing.

WORKS:

Paterson, N. J. Dundee Lake, N. J. Allentown, Pa. Williamsport, Pa.

THE SILK MARKET

The silk market shows a further decline in prices, owing, for the most part, to conditions in Europe which affect our commerce and the financial situation. Then again the silk industry is at low ebb as far as the quantity of the raw product being moved is concerned. It is said that the prices are the lowest since 1903.

Manufacturers are buying only enough to carry out their present contracts and this condition will probably continue until the war is over. Whether or not still lower prices will prevail is problematical.

In Japan the market continues quiet, with very little business being transacted. It is reported at Yokohama that about 25,000 bales of silk have been collected.

In Canton no market change can be recorded, but a number of inquiries are reported for the fifth crop which is just coming on the market. Shanghai also reports very little business, steam filatures and tussahs not being in great demand. It is, however, expected that in the near future tsatlees will be more or less called for.

The Milan market is somewhat easier, and, although stocks are reported small, reelers are reported to be more anxious for orders.

It is quite interesting to hear the report from Lyons, France, that, although this nation is at war and business generally quiet, the silk mills are running up to about 50 per cent. of their normal capacity, with transactions on the increase. This is good news as the report had gone forth previous to this that the silk industry was very dull, practically no business being transacted.

The manufacturers in this country are not very optimistic as to the future and hardly know as yet what demand for the finished product will develop in the spring. This fact keeps many of them out of the market as they are disposed to play a waiting game.

In the dry goods district it is reported that silk and silk finished goods are not moving as rapidly as heretofore. A general curtailment of buying seems to have manifested itself. Some think this a temporary condition and that after the first of the year when spring business begins to open up, more silk goods, broad and narrow, will be called for. Buyers of the larger stores are holding back on account of the fact that no one as yet knows what will be worn in the spring. This being so, it has its effect on many of the silk manufacturers. It is, however, predicted that in broad silks, poplins, crepes, satins and velvets will be much worn, while in ribbon, the Roman stripes will probably remain popular.

When the financial depression is cleared up and money becomes easier, business in the silk industry will take on a new impetus.

Below are prices current at this writing:

VILLA, STEARNS COMPANY
Telephone, 6174 Gramercy
American Woolen Building
221 Fourth Avenue, New York
RAW AND THROWN SILK
Silk on Spools, Cones, Quills, Beams
DYED SILK FOR ALL PURPOSES
Philadelphia Office:
519 Bourse Building
Providence Office:
Howard Building

KROUT & FITE MANUFACTURING CO.,
MANUFACTURERS OF
Silk, Cotton and Mercerized Narrow Fabrics
SPOOL TAPES A SPECIALTY
TELEPHONE CONNECTION
OFFICE AND MILL ALLEGHENY AVE. AND EMERALD ST., PHILADELPHIA

Better Than Daylight

THE ability, and willingness, of your operatives, to work at maximum producing capacity is largely influenced by the lighting facilities.

During artificial lighting periods of the day, under ordinary illumination, there is a marked drop in both quantity and quality of production. With ***Cooper Hewitt Light,*** production after dark is as large, and of as good a quality as during the best daylight hours. In fact many operatives claim that ***Cooper Hewitt Light*** is better than daylight to work under.

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8th and Grand Sts., Hoboken, N. J.

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Chicago—215 Fisher Bldg.
Cincinnati—1st Nat. Bank Bldg.
Cleveland—Engineer's Bldg.
Detroit—Ford Bldg.
Minneapolis—Andrus Bldg.
Philadelphia—124 So. 8th St.
Pittsburgh—Westinghouse Bldg.
St. Louis—Cen. Nat. Bank Bldg.

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ORGANZINE, TRAM AND HOSIERY SILKS

Fast Dye Organzines for Woolen Manufacturers a Specialty

Mills: Bethlehem, Pa., Philadelphia, Pa., Scranton, Pa. New York Representative, Wm. Ryle & Co., 225 Fourth Ave.
Philadelphia Office, 4015 Clarissa St., Nicetown
Chicago Office, 206 So. Market St. **Boston Office, 78 Chauncey St.**

SILK THROWING AND WASTE SILK SPINNING

By RAYNER

Deals with the preparation of yarn from the raw silk; also waste silk spinning and the utilization of waste products. For silk manufacturers or workers, or for men who use silk in connection with cotton, worsted or wool. 158 pages; 117 illustrations; cloth. **Price $2.50, prepaid**

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Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

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European

Grand Extra Classical Piedmont	4.22-4.25
Extra Classical Italian 12/14 12/16	3.85-3.90
Classical Italian 13/15 24/26	3.70-3.75
Best No. 1 Italian 13/15 24/26	3.60-3.65

6 months' basis

Japan

Filature Kansai Extra Extra	3.55-3.60
Filature Kansai Extra 13/15	3.27½-3.30
Filature Shinshu Extra 13/15	3.12½-3.15
Filature Kansai Best No. 1 13/15	3.05-3.10
Filature Kansai No. 1 13/15	3.05-3.07½
Filature Shinshu 13/15	2.92½-2.95
Rereels No. 1 13/16	Nominal
Rereels No. 1 1/2 13/16	Nominal
Rereels No. 1 1/2-2	Nominal

6 months' basis

China

Canton XXA 14/16 (new silk)	2.57½-2.60
Canton XXB 14/16	2.55-2.60
Tsatlee Blue Dragon & Flying Horse	2.52½-2.55
Tsatlee Kun Kee Mars No. 1	2.90-2.92½
Tussah Filature Eight Cocoon No. 1-2	95

6 months' basis

SPUN SILK

The spun silk manufacturers report business only "fair," but still they are having quite a demand for their product, most of the buying being in small quantities. This condition is, no doubt, owing to the general depression in business. It is expected that this branch of the industry will take on its normal condition in a short time. A drop in the price took place on October 15th and it is felt that it has reached the bottom price. This drop in price was no doubt brought about by the spun silk manufacturers to stimulate buying.

60/2	3.80
50/2	3.70
40/2	3.60
30/2	3.45
20/2	3.35
10/2	3.25

NEW SILK MILL

*Pennsylvania, Wyoming. Good progress is being made on the construction of the new silk throwing mill at First St. and Sharpe Ave. The mill is to be completed and in operation early in January and will be known as the Anthracite Silk Throwing Company. Peter Magagna, president and manager of the White Haven (Pa.) Silk Company, and of the Nanticoke (Pa.) Silk Throwing Company, will be president and buyer of the new mill.

A. P. Villa & Bros.

Raw, Thrown and Dyed Silks

Silk on Quills or Beams. Hosiery Silk on Cones

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In Gray or Dyed.
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on cones and tubes

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Mercerized and Cotton Yarns, Yarns and Threads

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TEXTILE BOOKS

THE following list contains the titles of some of the textile books which we recommend. We carry these in stock for prompt delivery. Our full descriptive catalog, giving lists of practically all textile books published in the English language, with a brief synopsis of contents, will be mailed free.

General Subjects

Advanced Textile Design, *Watson*	$4 00
Analysis of Woven Fabrics, *Barker and Midgley*	3 00
Art of Soap Making, *Watt*	3 00
Calculations in Yarns and Fabrics, *Bradbury*	1 25
Carpet Manufacture, *Bradbury*	3 00
Color in Woven Design, *Beaumont*	6 00
Drying by Means of Air and Steam, *Hausbrand*	2 00
Flax, Hemp and Jute Spinning and Twisting, *Carter*	3 00
Improved Slide Rule, *Hogg*	3 50
Introduction to Study of Textile Design, *Barker*	2 50
Jacquard Weaving and Designing, *Bell*	4 00
Manual of Weave Construction, *Kastanek*	1 00
Preliminary Operations of Weaving, *Nesbitt*	2 50
Science of Knitting, *Tompkins*	3 00
Silk Throwing and Waste Silk Spinning, *Rayner*	2 50
Simplex Tables	50
Spinning and Twisting of Long Vegetable Fibres, *Carter*	5 00
Story of Textiles, *Walton*	3 25
Technical Testing of Yarns and Fabrics, *Herzfeld*	3 50
Textile Design, *Woodhouse and Milne*	3 25
Textile Design, *Umpleby*	2 25
Textile Design and Color, *Watson*	2 50
Textile Fibres, *Matthews*	4 00
Textile Soaps and Oils, *Hurst*	3 00
Textiles, *Barker*	2 00
Warp Preparation and Weaving, *Nelson*	2 25
Waterproofing of Fabrics, *Mierzinski*	2 50
Weaving, Plain and Fancy, *Nelson*	1 25

Cotton Manufacture

Carding and Spinning, *Ivey*	$1 00
Chemistry of Tape Sizing, *Cooper*	1 50
Cotton Carding, *Lindsay*	50
Cotton Cloth Designing, *Holmes*	2 00
Cotton Combing Machines, *Thornley*	3 00
Cotton Manual, *Broadbent*	75
Cotton Mill Machinery and Calculations, *Parker*	1 50
Cotton Spinning, *Hedrick*	3 00
Cotton Spinning (3 vols.), *Taggart*	7 50
Cotton Spinning (3 vols.), *Thornley*	6 50
Cotton Waste, *Thornley*	3 00
Humidity in Cotton Spinning, *Dobson*	1 50
Loomfixing and Weaving, *Ivey*	1 25
Mule Spinning, *Thornley*	3 00
Plain Series of Cotton Spinning Calculations, *Cook*	1 00
Practical Cotton Calculations, *Whitworth*	1 00
Structure of the Cotton Fibre, *Bowman*	3 00
Students' Cotton Spinning, *Nasmith*	3 00

Woolen and Worsted Manufacture

Cone Drawing, *Buckley*	$ 50
Faults in the Manufacture of Woolen Goods and their Prevention, *Reiser*	2 50
Finishing of Textile Fabrics, *Beaumont*	4 00
How to Make a Woolen Mill Pay, *Mackie*	2 00
Manual of Cloth Finishing	6 50
Practice in Finishing Woolens and Worsteds, *Greene*	50
Principles of Wool Combing, *Priestman*	1 50
Principles of Woolen Spinning, *Priestman*	2 50
Principles of Worsted Spinning, *Priestman*	2 50
Structure of the Wool Fibre, *Bowman*	3 00
Wool Carding and Combing, *Barker and Priestly*	1 50
Woolen and Worsted Loomfixing, *Ainley*	1 00
Woolen and Worsted Finishing, *Tymerman*	2 25
Worsted Overlooker's Handbook, *Buckley*	50
Worsted Preparing and Spinning, (2 vols.), *Bradbury and Buckley*	3 00

Bleaching, Dyeing, Printing, Finishing, Etc.

Aniline Black, *Noelting and Lehne*	$5 00
Bleaching and Dyeing of Vegetable Fibrous Materials, *Hubner*	5 00
Bleaching of Linen and Cotton Yarn and Fabrics, *Tailfer*	5 00
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Principles and Practice of Textile Printing, *Knecht and Fothergill*	10 50
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Silk Dyeing, Printing and Finishing, *Hurst*	2 00
Textile Chemistry and Dyeing, *Olney*	2 25
Textile Fabrics and Their Preparation for Dyeing, *Hasluck*	1 00

Any of the above sent postage or express prepaid on receipt of price. Subscribers to the TEXTILE WORLD RECORD may buy books from us with the understanding that if not satisfactory, they may be returned within five days (postage or express paid) if in good order, and money will be refunded.

Lord & Nagle Co., Boston, Mass.

ARTIFICIAL SILK

Nothing new can be said regarding this industry, as it still remains quiet. As yet no artificial silk is being received from Europe, with the exception of that which is shipped from England, so that no quotations other than these are available. It is yet too early for these manufacturers to predict how much of their product will be used by the braid manufacturers, but they are hopeful that there will be much buying of artificial silk within a short time. Below are prices current:

150 Deniers English A—Bleached	1.95
150 Deniers English B.—Bleached	1.85
150 Deniers English C.—Bleached	1.67

SILK

New Mills.

New Jersey, Paterson. An 8-loom broad silk plant is being started at 112 Straight St. under the name of the Nobles Textile Works. Six more looms will be added at an early date.

New Jersey, Paterson. James Rafferty, who has been doing a commission twisting and entering business, has started a six-loom broad silk plant at 408 E. 21st St.

New Jersey, Paterson. The Century Silk Company, composed of M. Ellenberg, formerly of the Royal Silk Company, H. Sauer and A. Goldberg, is being started with 16 broad silk looms at 112 Straight St.

New Jersey, Paterson. I. Nussman Silk Co. is the name of a new 12-loom broad silk plant located in the Atherton Mill.

Pennsylvania, Elysburg. Contract has been let for the erection of a brick mill, 50 by 150 feet, with an engine and boiler room, 50 by 50 feet, for the Perfect Silk Throwing Company of Shamokin. The capitalization of this concern will be increased from $20,000 to $40,000. On the completion of the new mill part of the machinery will be taken out of the Shamokin plant and with some new machinery will be installed in the new plant at Elysburg. In the power department a 100 k. w. generator will be installed for lighting the town. They expect the building to be ready and in operation by December 1. The Perfect Silk Throwing Company also expect to have arrangements made for a third plant in a Pennsylvania town by January 1. C. H. Knepka, the manager, states that they are endeavoring to have five plants in operation before the end of next year. The site at Elysburg was donated by W. L. Knoebel and comprises a tract, 200 by 200 feet.

*Pennsylvania. Scranton. The new silk weaving plant organized by William Kelly, vice-president of the Pennsylvania Central Brewing Company, has begun manufacturing on the third and fourth floors of the building at 16 Lackawanna Ave., giving employment to 60 to 75 hands. The company was organized in June under the name of the Kelly Silk Company.

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JAMES CHITTICK
122 EAST 25th STREET, - NEW YORK
Costs Calculated, Advice Given on Mill Matters, Damaged Goods, and on Textile Questions of every kind
Mill Properties Reported On
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"Silk Manufacturing and Its Problems"
580 pages 9x6, price $2.80 delivered
Deals with all phases of Manufacturing, Distributing, Financing, etc. Prospectus sent on request.

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Tram, Thrown Silk, Organzine, Artificial Silk
Domestic and Imported, Plain, Gassed and Mercerized. Polished and Glazed Cotton, Mohair, Worsted and Tinsel.
Best Quality Harness Twine
107-109 Greene St., New York
Silk Throwing Mills, BEACON and YONKERS, N. Y.
YARNS

SILK MILL SUPPLIES
OF EVERY KIND AND DESCRIPTION
Also Power Transmission Supplies for General Mill Use
I. A. HALL & CO.
Paterson, N. J.
Allentown Reed, Harness and Mill Supply Co.
Allentown, Pa.

Alexander Smith & Son
Warping and Winding on Commission
Work Done on Frames with Swiss Motion
All Goods Fully Insured
Raw Silk Warping a Specialty
Cor. Centre and Glendale Streets EASTON, PA.

United States Conditioning & Testing Company
Cotton, Wool and Silk Conditioning
Fabric Testing and Chemical Analyses
Offices and Laboratories, 340-44 Hudson St., (cor. Charlton St.)
NEW YORK
D. E. Douty, Mgr. F. G. Boye, Supt. K. B. Lamb, Chem. Eng.

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Bindings and Ribbons
For binding Cotton and Woolen Bed Blankets, Go-cart Covers, Kimonas, Bath Robes, etc.
Special Colors or Shades made to order

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Importer and Dealer in all kinds of
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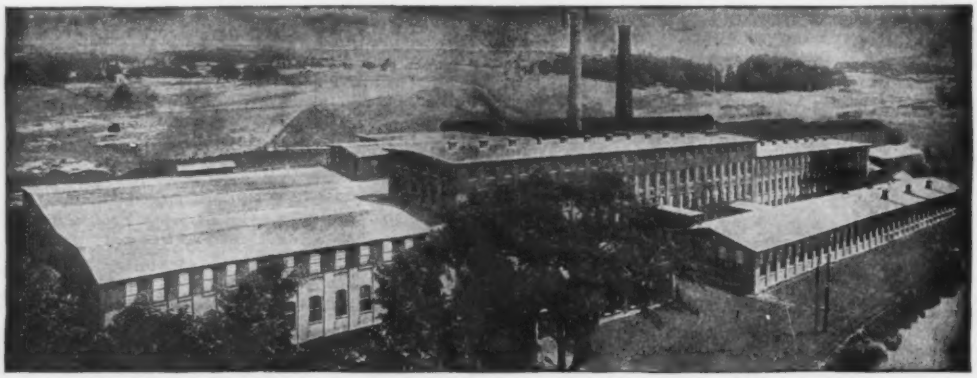
In the Skein or on the Beam. Tel. Mad. Sq. 8868



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Sheetings, Shirtings, Lawns, India Linons.
Everything in White Goods.
Capacity, 30 Tons Daily

JOHN MacMANUS, Manager CHADWICKS, N. Y.

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IT BOILS THIN. PENETRATES THE WARPS. INCREASES BREAKING STRENGTH. THE STANDARD SIZING AND FINISHING STARCH FOR TWELVE YEARS. A TRIAL WILL CONVINCE YOU.

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Elbridge G. Snow, President

Organized 1853 MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $6,000,000

ASSETS, January 1, 1914.....$33,139,915.81

LIABILITIES (Except Capital)..... 17,066,896.12

SURPLUS AS REGARDS POLICY HOLDERS.. 17,873,019.69

Losses Paid Since Organization over 145,000,000.00

INDEMNITY For Loss of Profits Commissions Use and Occupancy on acceptable Protected Plants at the Minimum Rate

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

OWNERS OR TENANTS may have for the asking proper advices in relation to the FIRE HAZARD and the Value of Automatic Sprinkler and other protection for the manufacturing or distributing plant. Correspondence invited by the

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56 CEDAR STREET, N. Y.

DYESTUFFS AND CHEMICALS

The unsettled conditions in the dyestuff and chemical trades caused by the European situation make it impossible to get quotations which would be of any value to our readers. The dyestuff and chemical list of quotatons will therefore be omitted until this trade is again on a normal basis.

FIRES.

New York, Brooklyn. A fire in the 2-story brick structure at 378 Wallabout St. gutted the knitting plant of Max Auerbach, who manufactured bathing suits and women's sweater coats under the style of the North American Knitting Works.

New York, New York City. Fire which originated on the ground floor of the building at 122 Leonard St., in which one of the plants of Rubenstein Bros., trading as the Progressive Knitting Works is located, destroyed the entire building. Rubenstein Bros. have insurance of $40,000, but are unable to tell the exact relation of their loss to the amount of insurance. They will not start up again at this location, but are unable to tell at this writing where they will locate. The burned plant was the sweater manufacturing department. Another department is located at 422 S. 5th St.

Pennsylvania, Reading. The plant of the Reichart Dyeing, Bleaching & Finishing Co. has been destroyed by fire, the loss being estimated at $15,000. It is said in some quarters that the plant was dynamited and destroyed by explosion. They made a specialty of dyeing and bleaching hosiery underwear and toweling with a capacity of 4,000 pounds per day.

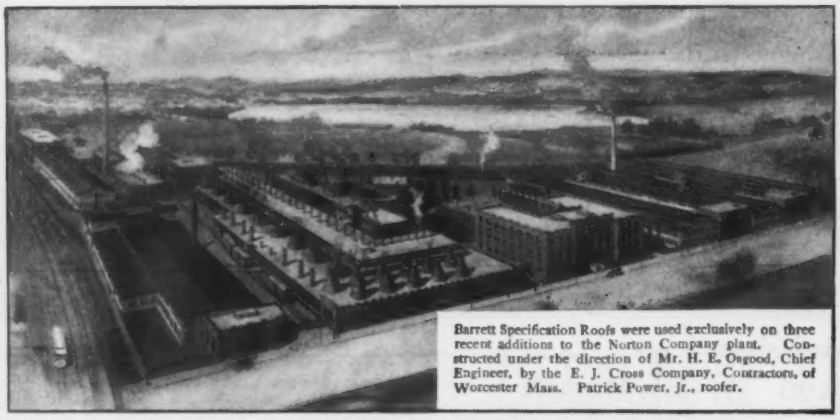
Pennsylvania, Philadelphia. A fire which promised to do considerable damage, but which was extinguished by fire apparatus in the plant, started in the picking department of the woolen and worsted yarn mill of Sykes Bros., Hancock and Huntingdon Sts., where they operate 14 sets wool cards, 3,286 wool spindles, 2 combs, 3 cards and 1,528 worsted spindles.

Pennsylvania, Philadelphia. The factory building at Kinsey and Josephine Sts., occupied jointly by Arthur Rhodes, manufacturer of art squares on 7 looms, and James Newton's Primrose Tapestry Mill, which he operated on tapestry curtains, table covers and novelties, has been practically destroyed by fire, which is said to have started through spontaneous combustion. The loss is estimated at about $22,000.

MISCELLANEOUS.

Canada, Alberta, Calgary. A company has been organized under the name of the Western Canada Cordage Company with capital stock of $500,000, and it is reported that construction work will be started this fall on a mill to be 400 by 120 feet. The location selected is in Manchester, a suburb of Calgary.

Canada, Quebec, Montreal. F. Kay has equipped a plant for commission skein dyeing at 231 Chatham St.



Barrett Specification Roofs were used exclusively on three recent additions to the Norton Company plant. Constructed under the direction of Mr. H. E. Osgood, Chief Engineer, by the E. J. Cross Company, Contractors, of Worcester Mass. Patrick Power, Jr., roofer.

Barrett Specification Roofs

Barrett Specification Roofs are so generally used on great manufacturing plants that specifying this type may truthfully be described as "standard practice" among first-class architects and engineers.

Here, for example, is illustrated the eleven-acre plant of the Norton Company, at Worcester, Mass. Some of these buildings are very old, but they are all covered with felt and pitch roofs laid along the lines of The Barrett Specification.

Such roofs will usually last twenty years without maintenance cost of any kind. Sometimes they last up to thirty years.

They invariably show a lower unit-cost (that is, cost per foot per year of service) than any other roof covering known.

Barrett Specification Roofs also take the base rate of fire insurance, because they are recognized as non-inflammable.

A copy of The Barrett Specification, with roofing diagrams, free on request.

Special Note

We advise incorporating in plans the full wording of The Barrett Specification, in order to avoid any misunderstanding.

If any abbreviated form is desired, however, the following is suggested:

ROOFING—Shall be a Barrett Specification Roof laid as directed in printed Specification, revised August 15, 1911, using the materials specified and subject to the inspection requirement.

BARRETT MANUFACTURING COMPANY

New York Chicago Philadelphia Boston St. Louis Cleveland Cincinnati
Pittsburgh Birmingham Kansas City Minneapolis Seattle
The Patterson Mfg. Co., Limited: Montreal Toronto Winnipeg Vancouver
St. John, N. B. Halifax, N. S. Sydney, N. S.

B

MILL STOCKS

Owing to the disturbed financial relations, current quotations of mill stocks are nominal. Following are the quotations previous to the breaking out of the war:

NEW BEDFORD MILLS

	Bid.	Asked.
Acushnet Mill	137½	...
Beacon Mfg. Co., com.	102	...
Beacon Mfg. Co., pfd.	...	115
Booth Mfg. Co., com.	...	21
Booth Mfg. Co., pfd.	...	47½
Bristol Mfg. Co.	...	67½
Butler Mill, com.	...	90
Butler Mill, pfd.	...	100
City Mfg. Co.	...	92
Dartmouth Mfg. Co., com.	127½	...
Dartmouth Mfg. Co., pfd.	97½	...
Gosnold Mfg. Co., pfd.	...	89
Grinnell Mfg. Co.	...	180
Holmes Mfg. Co., com.	104	...
Holmes Mfg. Co., pfd.	105	...
Kilburn	118	...
Manomet	...	114½
Nashawena Mills	...	66
N. B. Cotton Mills Co., com.	100	98½
N. B. Cotton Mills, pfd.	96	...
Neild Mfg. Co.	...	95
Nonquitt Spinning Co.	...	94
Page Mfg. Co.	...	77½
Pierce Mfg. Co.	295	300
Pierce Bros., Ltd.	100	...
Potomska Mills	115	...
Quissett Mills, com.	...	98
Quissett Mills, pfd.	100	102½
Sharp Mfg. Co., com.	...	85
Sharp Mfg. Co., pfd.	...	100
Soule Mills	...	80
Taber Mills	...	100
Wamsutta Mills	115	119
Whitman Mills	114½	123

SOUTHERN MILLS

	Bid.	Asked.
Abbeville	85	100
American Spinning Co.	155	...
American Spinning Co., pfd.	100	...
Arkwright Mills	...	100
Aragon, com.	59	...
Avondale	120	126
Arlington	130	...
Brogan Cotton Mills (new series)	...	81
Brookside	...	...
Cannon	125	...
Cabarrus	120	...
Chadwick-Hoskins	...	...
Chadwick-Hoskins, pfd.	...	101
Chiquola Cotton Mills, pfd.	80	...
Clifton, com.	80	...
Clifton, pfd.	96	100
Clara	100	...
Cliffside	190	...
Columbus Manufacturing Co.	...	85
Darlington	75	83½
Drayton	29	...
Erwin, pfd.	...	105
Easley	...	125
Exposition	...	210
Florence	125	128
Gaffney Manufacturing Co.	59	...
Gibson, com.	109	110
Gluck	...	100
Graniteville, S. C.	140	152
Grendle	...	96
Glenwood	...	150
Glen Lowry, pfd.	...	76
Highland Park	200	203
Highland Park, pfd.	...	102
Hartsville	175	195
Hartsville, pfd.	...	100
Henrietta Mills	...	117
Inman, com.	...	108
Inman, pfd.	...	100
Kesler	...	160
Lancaster Cotton Mills	130	...
Lancaster Cotton Mills, pfd.	96	...
Lanet	...	112
Laurens	127	136
Limestone	...	126
Lockhart, S. C.	...	72½
Loray Mills, pfd.	...	86
Modena	...	150
Mollohon	...	101
Monarch, S. C.	115	...
Newberry	125	...
Norris Mills	...	121
Ninety-six	130	140
Orr	...	86
Ozark	100	110
Parker Mills, com.	7	10
Parker Mills, pfd.	30	35
Parker Mills, guar.	...	88½
Pacolet Mfg. Co., com.	...	108
Pacolet Mfg. Co., pfd.	100	...
Patterson	129	...
Pelzer Manufacturing Co.	125	164
Piedmont Manufacturing Co.	150	167
Pell City, Ala.	...	80
Poe, W. F., Manufacturing Co.	100	103
Riverside Manufacturing Co.	...	78
Salisbury	150	...
Roanoke Mills	...	156
Saxon	114	...
Spartan	109	...
Toxaway	...	78
Union Buffalo, first pfd.	34	51
Union Buffalo, second pfd.	...	10
Warren Mfg. Co., com.	78	...
Warren Mfg. Co., pfd.	...	107
Washington Mills	7	...
Washington Mills, pfd.	100	...
Woodside Mills Co., com.	...	88½
Woodside Mills Co., pfd.	...	80
Woodside Mills Co., guar.	...	101
Watts	...	85
Williamson	...	125
Ware Shoals	70	...
Whitney	110	120
Wiscasset	140	150
Woodruff	...	107
Woodlawn	120	126
Young Hartsell	70	...

OTHER NEW ENGLAND MILLS

	Par Value.	Last Sale.
Amoskeag Mfg. Co., com., N. H.	100	62
Amoskeag Mfg. Co., pfd., N. H.	100	99½
Androscoggin Mills, Me.	100	137
Arlington Mills, Mass.	100	80

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Save Valuable Time in Handling Tools and Small Parts

Merchandise or Tool Truck or Spool Truck for Textile Mills

No. 11

Made with heavy galvanized sheet steel trays. Size inside of angles 31 by 31 inches square and 36 inches high over all. Braced as illustrated. Mounted on roller bearing casters.

Trays are interchangeable. State height of trays required. Total weight about 100 pounds each.

We make high grade angle steel office and factory stools, chairs, work tables, trucks with galvanized iron trays or pans and angle steel special products to order for office and factory use.

Truck No. 331

We can make stools or trucks as per cut herewith of any size or dimension required. Send us your specifications. Work in angle steel specialties solicited. No. 11 without back is No 1. *Other styles and sizes shown in catalog.*

Angle Steel Stool Co.

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Domestic Machinery Works

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Full Fashioned Knitting MACHINES

Rigged up to do anything from a knocking over bit to a finished Cotton frame. Also repair and change machines from the coarsest to the finest gauge.

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Special shaped carbon, black diamond, **pointed tools for** turning paper, rag, corn husk and cotton **calender rolls,** hard rubber, fibre, etc. Manufactured by

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The Chicago Portable Watchman's Clock

Approved by the National Board of Fire Underwriters and accepted by all Insurance Companies

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Simple, Efficient, Tamper-proof, Durable

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9 CHURCH STREET, NEW YORK

Appleton Co., Mass.	100	172
Bates Carpet Co., Me.	100	213¼
Bigelow Carpet Co., Me.	100	213¼
Boston Duck Co., Mass.	700	1280
Boston Mfg. Co., Mass.	100	85
Cabot Mfg. Co., Me.	100	100
Chicopee Mfg. Co., Mass.	100	90
Continental Mills, Me.	100	75¼
Dwight Mfg. Co., Me.	100	1021¼
Edwards Mfg. Co.	100	99
Essex Co., Mass.	100	187¼
Everett Mills, Mass.	100	112¼
Fisher Mfg. Co., Mass.	100	125½
Franklin Co., Me.	100	201¼
Great Falls Mfg. Co., N. H.	100	172¼
Hamilton Woolen Co., Mass.	100	95
Hamilton Mfg. Co., Mass.	100	77½
Hill Mfg. Co., Me.	100	90¼
Jackson Co., N. H.	1000	985
Lancaster Mills, Mass.	100	75
Lawrence Mfg. Co., Mass.	100	151¼
Lockwood Co., Me.	100	97
Lowell Bleachery, Mass.	100	125
Lowell Hosiery, Mass.	100	40
Lyman Mills, Mass.	100	120
Massachusetts Cotton Mills, Ga.	100	93⅛
Massachusetts Cotton Mills, Mass.	100	116
Merrimack Mfg. Co., com., Mass.	100	24⅝
Merrimack Mfg. Co., pfd., Mass.	100	83½
Middlesex Co., Mass.	100	55
Middlesex Co., pfd., Mass.	100	75
Monadnock Mills, N. H.	100	100
Nashua Mfg. Co., N. H.	500	672½
Naumkeag Steam Cot. Co., Mass.	100	172
Newmarket Mfg. Co., N. H.	100	95
Otis Mfg. Co., Mass.	1000	1852½
Pacific Mills, Mass.	100	107
Pepperell Mfg. Co., N. H.	100	305
Plymouth Cordage Co., Mass.	100	228
Salmon Falls Mfg. Co., N. H.	300	150
Shaw Stocking Co., Mass.	100	75
Suncook Mills, N. H.	100	20
Thorndyke Mfg. Co., Mass.	1000	1305
Tremont & Suffolk Mills, Mass.	100	100⅜
Waltham Bleachery & Dye Works, Mass.	100	140
York Mfg. Co., Me.	100	85

Wool Burring and Picking Machinery
Cloth Finishing Machinery

RAG OR SHODDY PICKER

Curtis & Marble Mch. Co.

WORCESTER, MASS.

FACTS AND GOSSIP.

*Georgia, Lawrenceville. John M. Williams states that negotiations for a lease of the Lawrenceville Mfg. Company's plant have not been completed and he and his associates may not operate the mill. Mr. Williams with W. C. Horton and Lee S. Radford lease and operated the Winder (Ga.) Cotton Mills.

Idaho, Idaho Falls. Men claiming to represent English capital recently spent several days here looking over possible mill sites. They claim that if proper arrangements could be made an investment of half a million dollars would be made in a mill. A site and certain power concessions were requested.

Illinois, Chicago. A local newspaper states that the British Government has deposited $5,000,000 in one bank here to pay for merchandise, including blankets, underwear, sweaters and other textile goods.

Illinois, Chicago. A local report states that representatives of the English and French governments are here negotiating for the purchase of 1,000,000 blankets for immediate delivery.

Louisiana, New Orleans. About $2,500,000 is to be expended by the Board of Commissioners of the Port of New Orleans in the erection of large one-story reinforced concrete warehouses and a terminal. Ford, Bacon & Davis are the engineers for the Board, and will be prepared to advertise for bids on November 15.

*Kentucky, Covington. A weaving plant for making narrow cotton fabrics is being operated at 12-16 E. Pike St. by R. T. Pearce Company, incorporated in March with capital stock of $5,000. Richard T. Pearce is manager. Electric power is used and the product is sold direct.

Maine, Harmony. H. A. Bartlett, who operates a small two-set plant on woolen yarns, has been obliged to close on account of low water. Enough orders are on hand to keep the plant running for three months, it is reported.

The Metallic Drawing Roll Co.
INDIAN ORCHARD, MASS.
MANUFACTURERS OF
Metallic Rolls
Especially adapted for Cotton Mills. 25 to 33 per cent more Production Guaranteed. Weight Reduced 33 to 50 per cent. No Leather Covering Bill.
WRITE FOR PARTICULARS

Interruption of Production
is recognized by textile mill operators as the most costly element of repairs.
Allis-Chalmers TEXTILE MOTORS
are so liberally designed and so sturdily constructed that they will operate for years without need of repairs providing they are properly supplied with oil while in service.
"Motors for all drives"
Allis-Chalmers Manufacturing Company
Power and Electrical Equipments
Milwaukee - Wisconsin
For all Canadian business refer to Canadian Allis-Chalmers, Limited, Toronto, Ont.

TRADE MARK REGISTERED IN UNITED STATES PATENT OFFICE
NON-FLUID OIL
The choice of the largest manufacturing plants wherever the owners demand EFFICIENCY, ECONOMY and CLEANLINESS
Due to its ability to adhere permanently to bearings, there is no dripping or spattering on walls, floors or belting. This elimination of waste means a reduction in lubrication expense and obviates the danger of rotting belting and damaging goods. Made only from the highest grade mineral oils, NON-FLUID OIL is not affected by temperature, but retains its "body" in any climate. Lasts 3 to 4 times longer than *fluid* oils, or greases—hence is MOST ECONOMICAL.
Write today for full information and FREE samples.
New York & New Jersey Lubricant Co.
165 Broadway - - New York
1430 Michigan Avenue - Chicago

FACTS AND GOSSIP.

Canada, Ontario, Guelph. An issue of $125,000 of preferred stock is under contemplation by Dominion Linens, Ltd., a new corporation which has taken over and put in operation the plant of the Dominion Linen Mfg. Company, at Guelph, and the Oxford Linen Mills at Tillsonburgh.

Connecticut, Bridgeport. An increase has been made in the capital stock of the Salt's Textile Mfg. Company from $100,000 to $2,000,000, classified as $1,000,000 preferred and $1,000,000 common stock. There is no change in the management.

*Connecticut, New Hartford. Lockwood, Greene & Co., Boston, state that there is no truth in the rumor that the Greenwoods Mill is to be equipped for making cotton duck. Lockwood, Greene & Co. operate the Touraine Mill, which occupies part of the Greenwoods property.

Connecticut, New Haven. It is rumored that a $125,000 textile plant is to be built on the harbor front at the extension of Stiles St., near South Front St. A tract of land comprising 25 acres has been sold to a manufacturing concern which comes from out of the State, according to Frank H. Mason.

*Connecticut, Norwalk. Everything is in readiness to begin manufacturing at the branch plant of the Mianus Mfg. Company of Coscob. The Mianus Mfg. Company took over last May the old Bishop Mill property, at one time occupied as a branch by the Salt's Textile Mfg. Co., of Bridgeport. This has been equipped with 6 sets of cards and 20 looms for making imitation fur goods and plushes and employment will be given to 65 to 70 hands. All goods will be finished at the Coscob plant, only carding, spinning and weaving being done in Norwalk.

Connecticut, Sprague. Manufacturing has not been started as yet by the Angus Park Hair Cloth Company.

Connecticut, Shelton. Before December 1 the Specialty Weaving Company will discontinue the local plant and move the machinery to one of the other mills of E. & H. Levy, of New York, the owners of the business. The real estate was sold several months ago to Sidney Blumenthal & Co., Inc.

Connecticut, Stafford. It is reported the Riverside Woolen Mills, William Park, proprietor which have been running overtime for several weeks, will put on a night shift of operatives.

Connecticut, Versailles. The Versailles Sanitary Fibre Mills, manufacturers of absorbent cotton, gauze, and sanitary napkins, have large orders on hand and the plant is being operated night and day. Harlan I. Dennett is agent.

*Georgia, Cedartown. It is reported that arrangements have been made by the new Peerless Cotton Mills to remodel the old knitting mill and equip it with cotton yarn machinery by January 1.

RATS KILLED BY SCIENCE

By the use of the wonderful bacteriological preparation discovered and prepared by Dr. Jean Danysz, of Pasteur Institute of Paris. Used with striking success in the United States and Europe for many years.

DANYSZ VIRUS

contains the germs of a disease peculiar to rats and mice only and is absolutely harmless to all animals other than mouse-like rodents. Because of the feverish condition caused by the Virus the Rodents die in the open. The disease is also contagious to them. HOW MUCH TO USE: For factory and mill buildings, from one to two dozen tubes for each 5,000 square feet of floor space. PRICE: One tube, 75c; 3 tubes, $1.75; 6 tubes, $3.25; one dozen, $6.00.

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Manufacturers of Reeds, Harness, Belting and General Mill Supplies

We make a specialty of Harness for American Warp Drawing-in Machine

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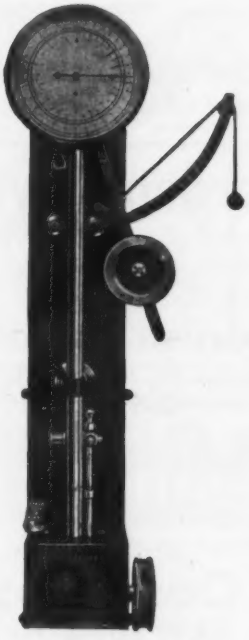
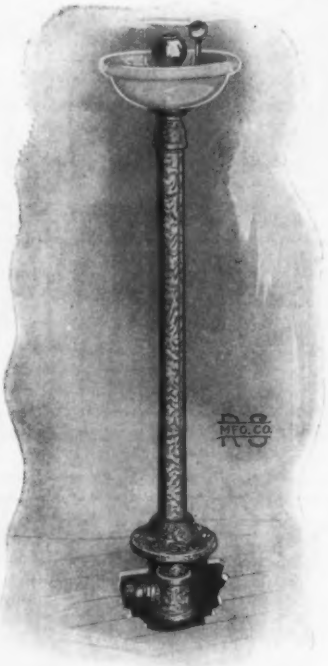
Bias and Straight Cut Fabrics and Ribbon
Embossing and Cutting Customers Own Goods a Specialty

AUTOMATIC
POWER YARN TESTER
PATENTED



Manufactured by
HENRY L. SCOTT & CO.
223-233 Eddy St., Providence, R.I.
Send for Catalogue C

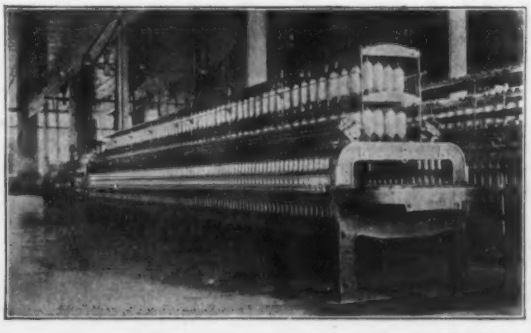
ECONOMY



This is one of our many inexpensive bubblers. Your people are in better condition, when properly refreshed, to give their best effort, so from a selfish as well as from a humanitarian standpoint, they should be furnished with modern, sanitary drinking fountains which will minimize sickness and time spent in using the old methods.

Rundle Spence Mfg. Co.
Milwaukee, Wis., U. S. A.

THE BROWN SPIN-WRIGHT



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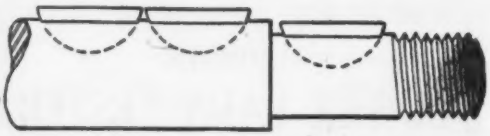
As Operated Successfully in a Large Mill

For Particulars Address

The Brown Spin-Wright Cotton Co.
32 Union Square, New York, N. Y.

Key Seating Attachment
FOR
Whiton Gear Cutter



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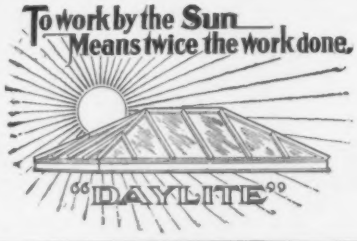

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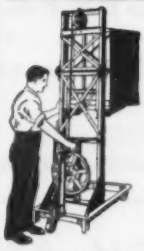

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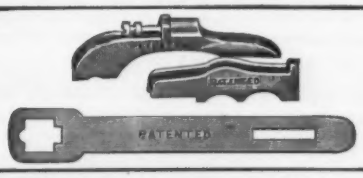

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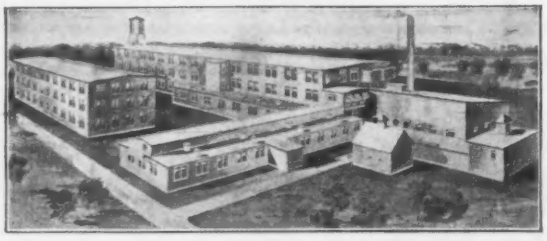

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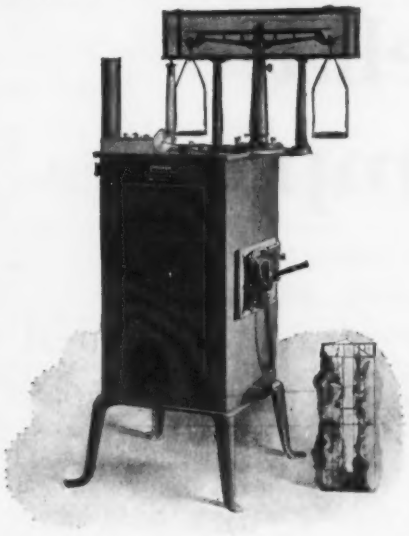

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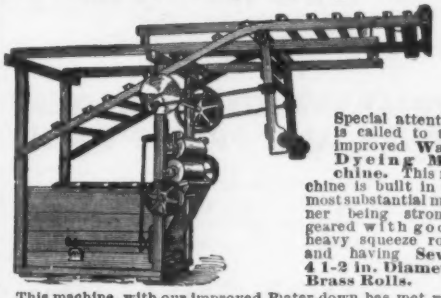

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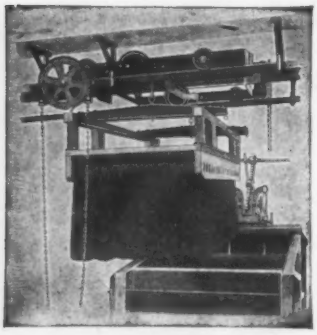

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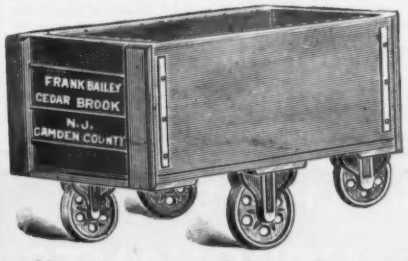

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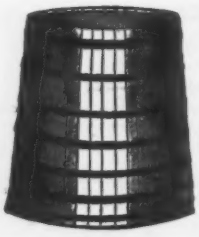

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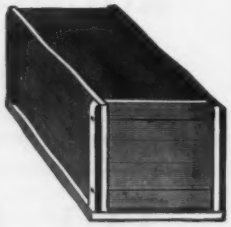

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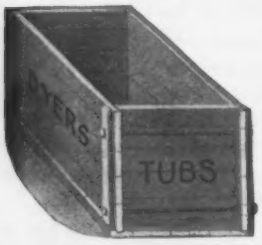

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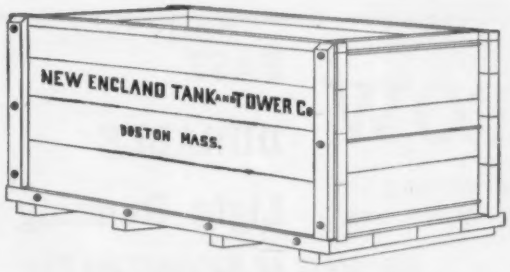

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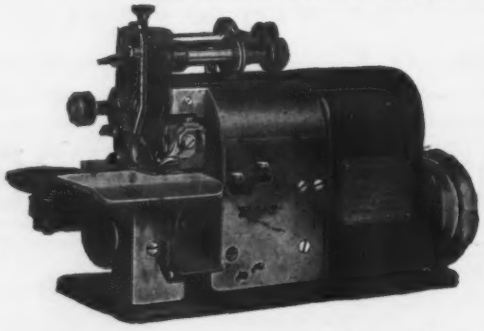
High Speed Overseaming, Overedging and Shell Stitch Machines are



OUR CLASS 60 MACHINES for Trimming and Overseaming in one Operation produce the strongest, best Seams and do it with the greatest economy.

USE STYLE 18 for Horse Blankets. STYLE 17 B or 22 for Bed Blankets. STYLE 35 E SHELL, for Necks and Fronts of Rib Goods, produces the most showy, substantial finish.

Send for Catalogue and Samples.

THE MERROW MACHINE CO. HARTFORD, CONN.

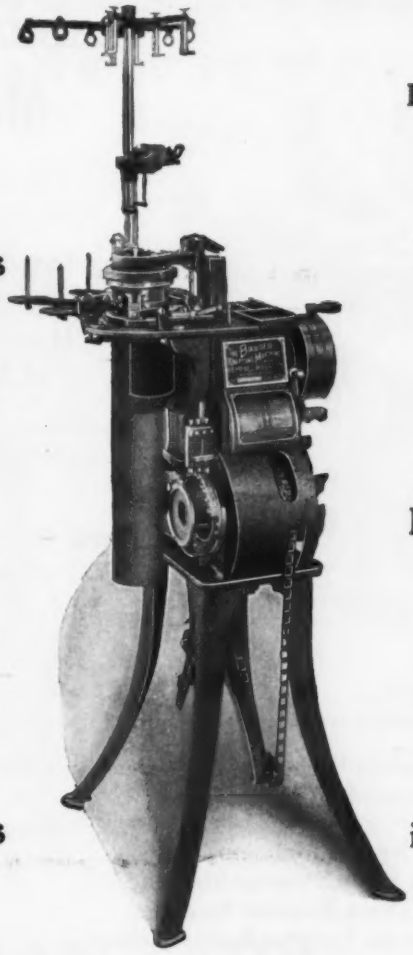
Knickerbocker Building, Sixth and Arch Sts., Phila. 467 Broadway, cor. Grand St., N. Y.
815 West Van Buren St., Chicago, Ill. 1019 E. Baltimore St., Baltimore, Md.

NEW MODEL

Banner Full Automatic Hosiery Machine

A FEW OF THE NEW FEATURES

Over **16,000** Banner Machines in successful operation



All working parts accessible from *front* of machine

Five Yarn Changing Levers

Automatic Transferring Device

New and *Novel* Device for High Splice and Double Sole Slackening

New Yarn Engaging Device

High Speed in *Heel* and *Toe*

Single Pick

Average production 100 machines a week

Over 4800 machines sold and delivered in 1913 as compared with 3700 in 1912

HEMPHILL MFG. CO.

131 Clay Street - - Pawtucket, R. I.

Don't Let the European War Interfere With Your Business

USE

Lamb Knitting Machines

The American Machine
Originated in America in 1856

For the last sixty years the

Lamb Knitting Machines Have Had the Habit of Making Good

No matter where they are used or under what conditions. The fact is due to

their Productive Capacity,
their Simplicity,
their Accessibility

We are prepared to furnish the Knitting Mills of this continent with a superior product and at short notice.

We call your attention to a few of our new improved machines:

Automatic Widener for Sleeves and Collars
Improved Power Machine
Four colors—Automatic 3 needle rack
Drop Needle Machine
Single Plate Sweater Machine
Back Drive Sweater Machine
Improved Sweater Body Machine

Send for particulars

LAMB KNITTING MACHINE CO.

Chicago **Chicopee, Falls, Mass.** **New York**

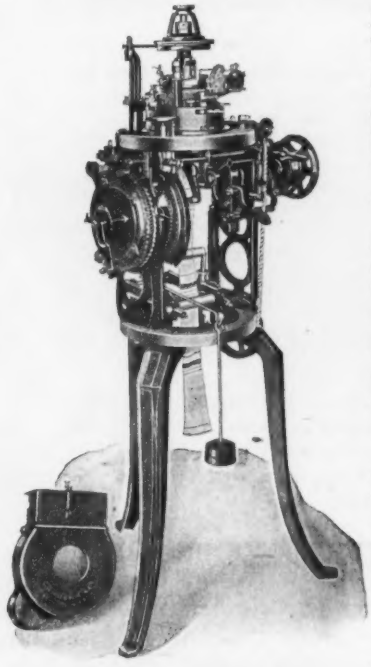
The Superior Advantages

of the

WILDMAN RIBBERS

are sometimes overlooked

HERE ARE A FEW OF THEM



Accuracy. For which Wildman workmanship is justly noted. Benefits of this arise from features too numerous to mention. Many of the surfaces are ground.

Durability. The Wildman ribbers undoubtedly have more hardened parts than any other ribber. Welt levers, take-up worms, etc., outwear similar devices.

Design. The Wildman ribber is the only one with a dogless attachment. The advantage of maintaining the position of the dial needle between the cylinder needles by positive mechanical means instead of pressure on the cloth are too numerous to mention.

Reliability. The Wildman ribber stop motion has never been equalled. The brake matches it. The welt lever motion is positive and sure.

General Features. The Wildman ribber is the only one with a chainless pattern mechanism, the popularity of which is a sufficient recommendation. The power transmission provides a quick stop and a gentle start. The two speed drive is supplied if desired. The Wildman automatic striper has no peer.

There are many other advantages worthy of investigation. Investigate in your own interest.

The Science of Knitting. A pocket text and reference book for everybody concerned with knitting, sent postpaid on receipt of $3.00

WILDMAN MFG. CO.

Established 1889

NORRISTOWN, PA.

Trade Mark

WITH War on in Europe and all sources of supplies closed, users of Imported Knitting Machinery begin to realize the *Value* and *Importance* of

Grosser Service

The entire organization at the service of our esteemed customers was built up with the points in view

I — To supply the best available machine for every special purpose.

II — To carry a good stock of these machines for immediate shipment when most wanted.

III — To have on hand all supplies, repair parts, needles etc. required for continuous and successful operating of such imported equipment.

IV — To bridge temporary disturbances or interruptions caused by unforeseen conditions.

It is gratifying to know; that users of imported factory equipment purchased through the Grosser Knitting Machine Company will be able to enlarge their plants by calling on the substantial stock of new machines carried here, while new imports are absolutely out of question.

That the equipment already in operation will not have to be stopped or discarded on account of lack of needles or repair parts, because we carry six months supply here;

That prices on goods on hand will *not be raised*, but legitimate orders filled in the usual way. We shall, of course, not permit anybody to "hog" our stocks, but are carefully distributing same, limiting every order filled to two months normal requirements. If they are used up, you will find us prepared fo fill a duplicate order with usual despatch.

While speculators and short-sighted importers may attempt to collect all the "war tribute" they can, you will find us adhering to sound business principles and clearing the deck for action, in order to serve you in the usual way, after trouble abroad has blown over and normal conditions have been re-established.

We bid for your future business, by taking good care of you, while trouble is menacing the success of your plant. We hope to be remembered later.

The Grosser Knitting Machine Co.

Max Nydegger

260 West Broadway - New York

Full Fashioned Hosiery Machines

—BUILT BY—

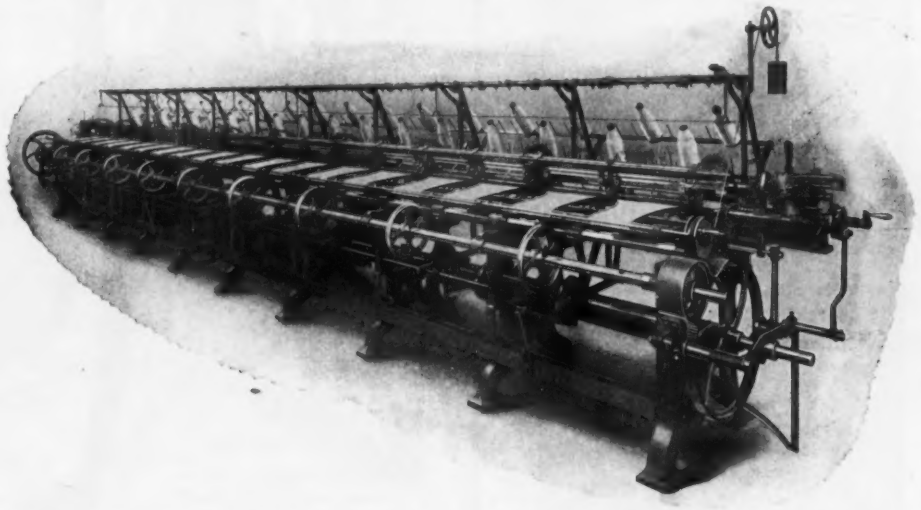
Schubert & Salzer Maschinenfabrik

and their two Branch Works

H. ALBAN LUDWIG and THEODOR LIEBERKNECHT

Chemnitz, Germany

Largest Manufacturers of all Classes of Hosiery Machines



Schubert & Salzer, in addition to the plant of H. Alban Ludwig, have recently acquired the plant of Theodor Lieberknecht and continue to build Full Fashioned Hosiery Machines in each of the three plants, retaining the special features of each individual type and at the same time using on all three machines various patented devices and all the practical attachments known to the trade. These machines are built in all gauges from 14 to 34 needles to the inch and from 12 to 24 sections.

Best Constructed, Most Economical and Productive Machines on the Market

REFERENCES:

All the leading manufacturers of full-fashioned hosiery in this country.

American Representative:

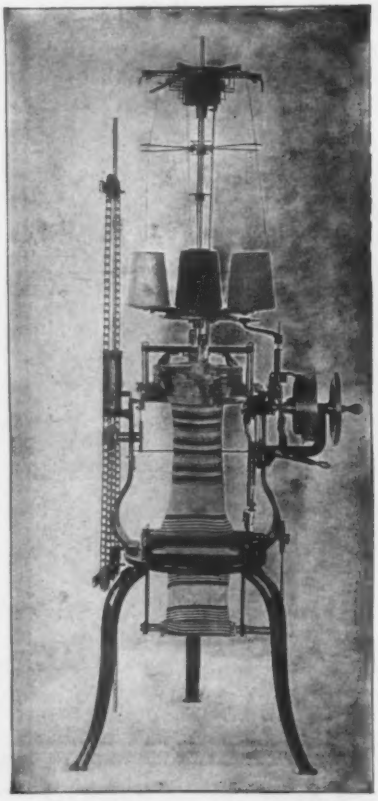
OTTO WALTHER, 507 Bourse, Philadelphia

1914

CRANE MFG. CO.

Established 1870 LAKEPORT, N. H. Incorporated 1890

Spring and Latch Needle Machines
for both Rib and Plain Work
Economically Producing
A GREAT VARIETY OF FABRICS



IMPROVED AUTOMATIC 3-COLORED PLAIN STRIPER

Made in sizes from 7½" to 14½" inclusive, of any desired gauge; these measurements being back to back of cylinder needles.

The fabrics from this machine are used for bathing suits, theatrical and athletic goods.

These machines are second to none in the market.

The Crawford stop-motion is applied when requested.

SOME CRANE FEATURES.

Patent removable hardened Wing Burr Wheels.
Patent Thread Stop Motion can be fitted to 20 in. and 40 in. frames and are specially adapted for making fine Jersey Cloth and Stockinet.
Our flat machine is adapted for knitting collarettes.

NYE & TREDICK CO.

718-720 Cherry Street
PHILADELPHIA, PA.

Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. Correct Construction, Excellence and Durability.

LATEST IMPROVEMENTS

Quality of Fabrics and Production
UNEXCELLED

NYE & TREDICK CO.

SEAMING FASHIONED KNITTED GOODS

A NEW, SUSPENDED CUP FEED, MACHINE FOR SEAMING FASHIONED UNDERWEAR AND SWEATERS

LIGHT RUNNING

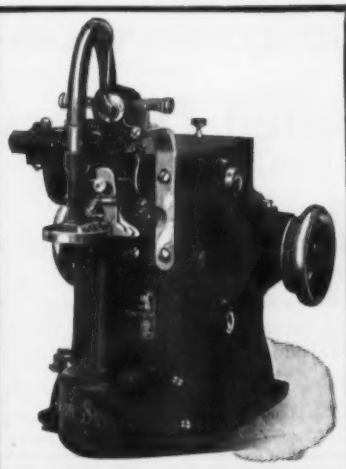
HIGHEST SPEED

DOUBLE THREAD INTERLOCK SEAM

Perfectly Flat and Elastic.

ENDS OF SEAMS LOCKED GIVING LOOPER FINISH.

HIGHEST DEVELOPMENT in machines of this character.



IMPROVED ADJUSTABLE UNCURLING DEVICE For Underwear Seams.

BOTH FEEDING CUPS ACTUATED

Insuring Positive Feed Upon Both Selvages, Overcoming the objectionable puckered seam

SUSPENDED FEEDING CUP greatly facilitates the handling of work.

INTERCHANGEABLE PARTS

OPERATION SIMPLIFIED

UNION SPECIAL MACHINE COMPANY

HOME OFFICE AND FACTORY: 300 W. Kinzie St., Chicago, Ill.

GENERAL EASTERN OFFICE: 63-65 Bleecker Street, N. Y. City

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BRANCHES:

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Amsterdam, N. Y., 13 Railroad Street.
Rochester, N. Y., 163 St. Paul Street.
Cohoes, N. Y., 39 Mohawk Street.
Utica, N. Y., 3 to 9 Blandina Street.
Philadelphia, 731 Arch Street.
Cincinnati, 434 Elm Street.
St. Louis, 1127 Pine Street.
Minneapolis, 4 Old Colony Bldg.
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Drying Forms

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS. T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA.

Hosiery Boards

E. O. SPINDLER

350 Broadway, New York, N. Y.

AGENT FOR

"Dubied" Flat Knitting Machines

For the sweater, etc. trade

BUILT BY

EDWARD DUBIED & COMPANY, Couvet, Switzerland

AND

Full Fashioned Hosiery Machines

"Cotton System"

BUILT BY

DAVID RICHTER, INC., Chemnitz, Saxony

According to latest advices received, both factories are working regularly on present orders. They are in a position to accept orders for future deliveries and can make immediate shipments from stock of staple knitting machines.

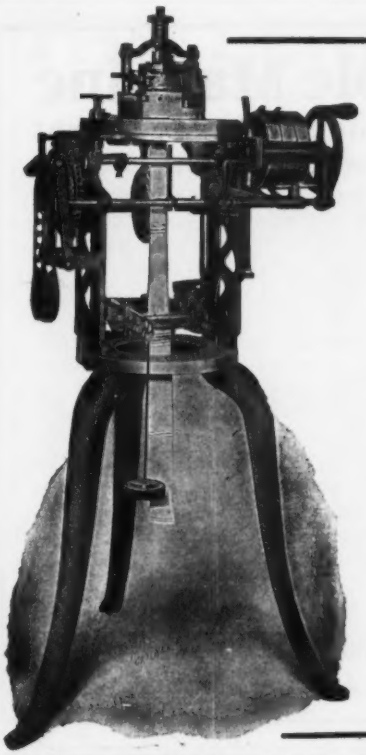
Your inquiry will receive prompt attention

John W. Hepworth & Company

N. W. Cor.
Lehigh Ave.
and
Mascher St.
Philadelphia, Pa.

Makers of Two Thread Elastic Lock Stitch Loopers

ALSO ATTACHMENTS for changing our single stitch loopers into the two-thread loopers.



H. BRINTON COMPANY

213-217 Race Street, Philadelphia, Pa.

BUILDERS OF

Circular Knitting Machinery

of every kind for every purpose

HOSIERY RIBBERS

with Splicing, Striping, Two-speed, Selvage Welt and French Welt Attachments.

Full Automatic Hosiery Footers

BODY MACHINES, SLEEVERS, etc.

for Underwear, Sweaters, Toques, etc.

NECKTIE MACHINES

for making all kinds of tubular knitted scarfs.
Write for catalog, prices and samples.

THE MOST COMPLETE LINE OF

Sweater Coat Machines

Automatic Racking Machines with or without striping attachments.
Herring Bone Stitch Coat Machines.
Plain Sweater Coat Machines.
Pineapple Stitch Sweater Machines.
Jersey Sweater Machines.
Plain Binding Machines.
Rotary Jacquard Binding Machines.

FOR INFORMATION, ADDRESS

STAFFORD & HOLT,

LITTLE FALLS, · NEW YORK, U. S. A.

The Reece Button-Hole Machine

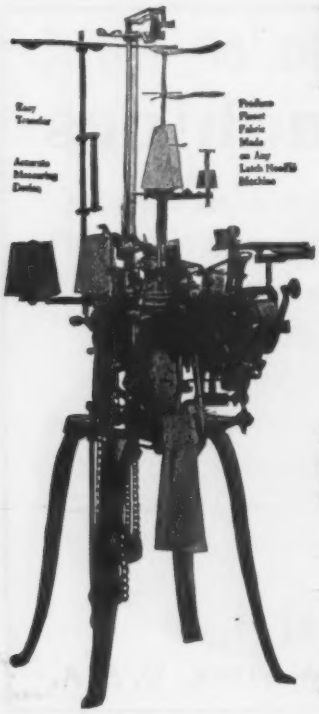
For Cutting and Stitching Straight Double-Barred Buttonholes

This machine is designed for cutting and stitching straight double-barred buttonholes without eyelets, from ⅛ of an inch in length up to 1 inch, in knit goods, shirts, shirtbands, collars, cuffs, etc., also on knit goods of all kinds. It is superior to all other machines, as it is the *only single thread* buttonhole machine on the market doing away with the bobbin or under thread, thereby making a great saving in the use of thread, and *it will produce more than double the quantity of work of any other machine*, thus saving the employment of an extra operator and the space of an extra machine. The quality of the work produced is superior to any other buttonhole, from the fact that the stitch is elastic, which is an important factor in knit goods. This machine is automatic in all its movements, and is an easy machine to handle, and does not require the services of a skilled operator, no cutting or pulling of the thread required, and when the buttonhole comes from the machine, it is finished in every respect and does not require to be trimmed or cut. The length of hole required can be obtained by simply turning a screw.

The machine is made of hardened steel drop forgings, thus reducing the breaking and wearing of parts to a minimum. *Samples of work and terms sent on application.*

THE REECE BUTTON-HOLE MACHINE CO.

Office and Factory - 500 to 514 Harrison Avenue, Boston, Mass



What Knitters are Saying About the "P.& O." Machine

"We are running this machine beside another popular knitter on silk and art silk plaited hosiery. On the 'P. & O.' machine we are making less menders, a more even fabric and bigger production. In fact it is the best machine we have in our mill."

SAVES 10% ON YARN

Makes Ladies' or Half Hose; garter top; no ravel, silk plaited or mercerized leg; high splice, double sole; advanced toe; linen or mercerized heel and toe.

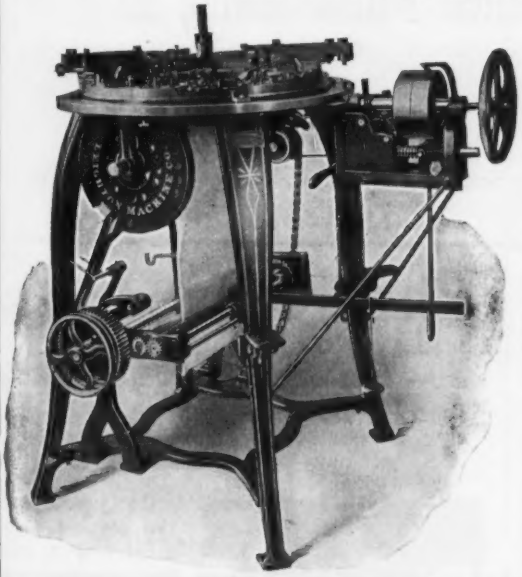
Write for full particulars

PAXTON & O'NEILL

541 N. THIRD ST., PHILADELPHIA, PA., U. S. A.

THE LEIGHTON KNITTER

HAS EARNED THE REPUTATION OF PRODUCING



Firm, Elastic Garments

USING LOW GRADE STOCK

THESE MACHINES ARE BEING USED FOR

High Grade Goods

MORE AS COMPETITION INCREASES

Real Efficiency

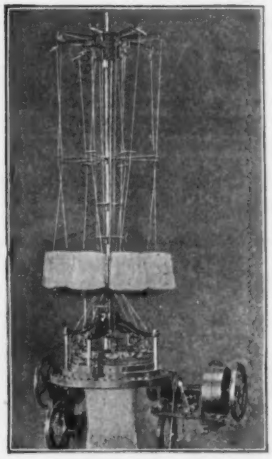
Means Excellent Stitches with ECONOMICAL OPERATION

For Particulars ask

LEIGHTON MACHINE CO.

Manchester, N. H.

CRAWFORD STOP MOTIONS



For all makes and sizes of

Circular Rib Knitting Machines

Twenty Years of Experience and Success

Adapted for HEAVY SWEATER yarns as well as UNDERWEAR work

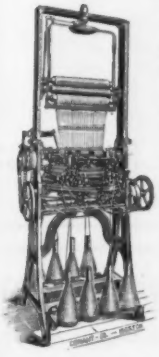
Crawford Manufacturing Co.

NEW BRUNSWICK, N. J.

CHARLES COOPER

BENNINGTON, VERMONT

MANUFACTURER OF



Knitting Machinery

Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder, **Spring Needle Cylinder, Rib-Top Machines** for making Cuffs, Drawer Bottoms and Shirt Borders.

Spring and Latch Knitting Needles

Burr Wheels

Burr Blades, Sinkers, Jacks, etc.

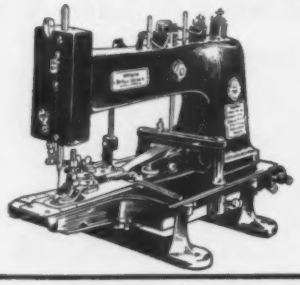
COLLARETTE ATTACHMENT

American representative:
G. H. ROGERS
838 Lancaster St., Albany N. Y.

European Representative:
FELIX LEDERER
1x/4 Schubertgasse, Nr. 22, Vienna, Austria

BUTTONS PUT ON TO STAY ON

No bobbins to wind. Will sew all buttons with any thread. No threads to trim. Saves 90% of the needle breakage.



Elastic Stitch Button Sewing Machine

saves money for manufacturers, and helps them increase the demand for their products. Without increasing the expense to the manufacturer, the Elastic Stitch Button Sewing Machine sews buttons on garments in such a way as to allow for thread shrinkage and to stand the wear and tear of the laundry, as well as giving to the buttons the same uniform finish that the tailor would give, and avoiding, as the tailor does, the drawn down, tight effect that is unavoidable when a two thread machine is used.

Send for proof and "List-of-Users" booklet.

Union Button Sewing Co., Dept., Frederick Osann Co.

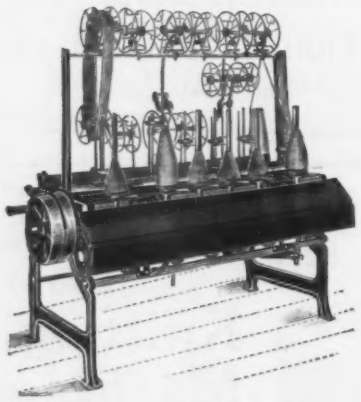
394 Atlantic Ave., Boston, Mass. 245 Seventh Ave., New York City

Agents Everywhere

A. W. ALLEN

2427 Mascher St., Phila.

WINDERS



6 SPINDLES UP

The best winder on the market. If you are not using one or more try one.

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,

Cor. Elm and Reed Sts., Reading, Pa.

NEW ENGLAND BUTT COMPANY

304 PEARL STREET, PROVIDENCE, R. I.

BRAIDING MACHINERY

ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS

SOLID SASH AND CURTAIN CORDS

SHOE AND CORSET LACES, BANDING

AND ALL BRAIDED FABRICS

"Acme" and "Hemphill"

SEAMLESS HOSIERY

Knitting Machines

built by

Acme Knitting Machine & Needle Company

FRANKLIN, N. H.

Answer all purposes in the *most reliable*, *up-to-date*, and *economical* manner. Write us for full particulars.

Manufacturers Like our Latch Needles

because we make a superior grade of needles

Philadelphia Office, Bourse Bldg.

HOW MUCH OF THIS

$10,000,000.00

DO YOU WANT?

About $10,000,000.00 worth of full fashioned stockings are made in America each year.

No matter what proportion of these millions you are now getting, you can get more of it if you will make full fashioned hosiery on our machines.

Because, the stockings you make will fit perfectly and bring you repeat orders.

The leading hosiery manufacturers are installing these machines.

If you are thinking of making full fashioned goods take up the question with us—as our success depends upon yours, we will prove to you that we can help you before you spend a cent.

TEXTILE MACHINE WORKS

READING, PA.

THE MAKERS OF AMERICAN FULL FASHIONED HOSIERY MACHINES

"Jenckes Model E"

BALL BEARING

Full Automatic Knitter

Revolving Needle Cylinder

Six Yarn Fingers

Plating

High Spliced Heel

Double Sole

Machine only 18 inches wide

Fabric Take-up

Transferring of ribbed tops without dropped stitches

Jenckes Quality Fabric

Jenckes Knitting Machine Co.

Main Office and Factory

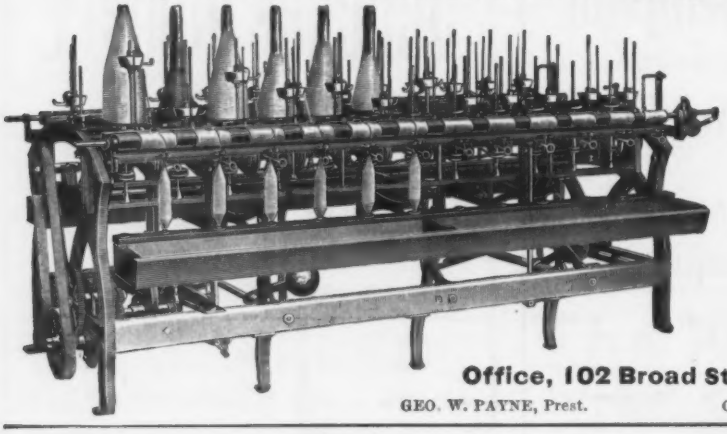
PAWTUCKET, R. I.

Philadelphia Office, 1211-1217 Filbert St.

Also builders of "THE INVINCIBLE"

OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers, Wind for Cop, Skein or Bobbin



Improved

Upright Spoolers

To Spool from Cop, Skein or Bobbin

Doubling Spoolers for doubling 2, 3 or more ends into one

Upright Quillers, Quill from Cop, Skein or Bobbin.

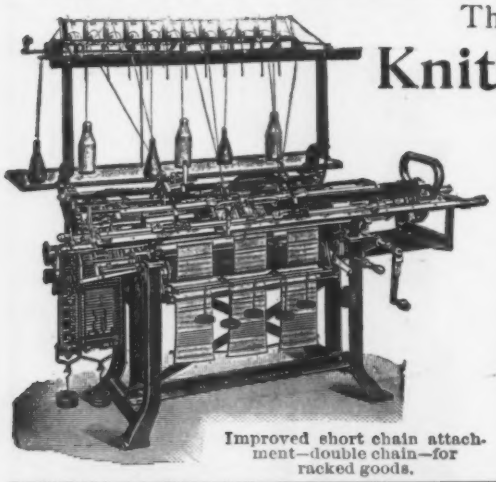
Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler Guides, Bolsters and Stops Made and Repaired at Short Notice.

GEO. W. PAYNE CO.

(Est. 1865, Inc. 1903.)

Office, 102 Broad Street, Pawtucket, R. I.

GEO. W. PAYNE, Prest. CLINTON F. PAYNE, Sec'y and Treas



Improved short chain attachment—double chain—for racked goods.

That is the Brand of the

Knitting Machines

worldwide known to be **The Best**

160,000 Knitting Machines in use all over the Universe

CLAES & FLENTJE

Muhlhausen Thr., Germany

(Largest Knitting Machine Factory in the World)

The cut represents one of our full automatic machines with double chain, short chain attachment, doing away with the long chain and lots of blocks.

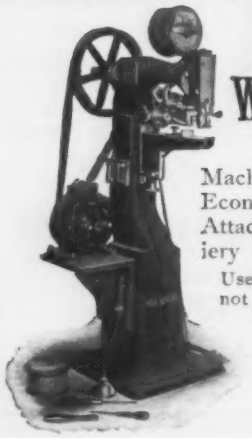
Machines for all kinds of plain and fancy knit goods by hand and full automatic by power.

Our knitting machines are far superior to any other in simplicity and construction. They give a higher production than any other on the market.

For full particulars, needles and supplies for all kinds of knitting machines, write to

Ainslie Knitting Machine Co.

281 Ainslie Street Brooklyn, N. Y.



New Jersey Wire Stitcher

Highest Grade

Machine for rapid and Economical Method of Attaching Labels to Hosiery or other Garments.

Uses pointed staples, cannot tear the finest fabric.

Send for Catalogue

J. L. Shoemaker & Co.

15 S. Sixth Street

PHILADELPHIA

We Are the Oldest Manufacturers

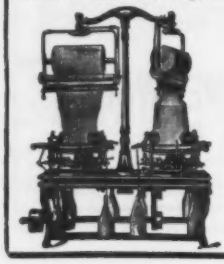
IN THE WESTERN HEMISPHERE

Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:

Cross Question 123. How long have you been a manufacturer of knitting machines? Answer I started in this business about the middle of May, 1900.



Tompkins Knitter

This design was adopted in 1875.

BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLEY Was born, according to his testimony in the case above cited.

"ACME"
Hosiery and Textile Binder
No. 30

A Simple, Inexpensive Machine for Attaching Tickets on Hosiery, Underwear, etc.

It uses a pointed staple, **CANNOT INJURE THE FINEST SILK HOSE**; can be set aside when not in use.

Is operated by foot power and has a **patented WORK-HOLDING DEVICE carrying one dozen or more pairs of hose, keeping them in perfect alignment and presenting the tops in position to receive the tickets AT LEAST TWENTY-FIVE PER CENT QUICKER** than by any other method now in use.

For particulars and the address of the nearest agency

Apply to the Manufacturers

The Acme Staple Company
Camden, N. J.

STANDARD "G"

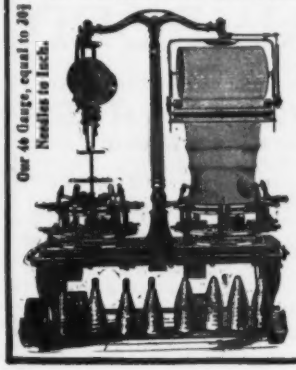
¶ A New Type of Hosiery Machine—being the result of 22 years of actual experience in studying the needs of the trade.

¶ Your investigation desired.

¶ Can be seen running at all times.

Standard Machine Company
OFFICE AND SHOWROOMS
330-340 N. 12th Street
Philadelphia

We are the Oldest Manufacturers
WITH
45 YEARS PRACTICAL EXPERIENCE



in building Spring Needle Knitting Machines. Have succeeded knitting the finest and the coarsest work ever made on Spring Needle Knitting Machines in this country, any work from 3 to 46 gauge. Our Machine is of the highest class.

Robt. W. Gormly and Company,
Troy, N. Y.

50%
Better than ever from YOUR standpoint

Several New Features

have been added to the "1912" Cloth Cutting, Folding and Winding Machine which *add at least 50% to its value to YOU.* It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine. It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an *extra* strip from every bolt of cloth.

It cuts the corners of expense in every way and leads to *more and greater profits.*

The Enormous Savings Will Interest You

Mail a card for complete information and prices. When in need of special machinery write me.

Department A
J. A. FIRSCHING 614 Broad St., Utica, N. Y., U. S. A.

CONTINENTAL LATCH NEEDLE CO.
NEW YORK
THE WORKMANSHIP AND QUALITY OF OUR GERMAN NEEDLES ARE UNSURPASSED OUR SCREW RIVET DOES NOT GET ROUGH OR LOOSE
LARGE STOCK OF NEEDLES FOR ALL AMERICAN AND FOREIGN KNITTING MACHINES
N.Y. OFFICE 120 LIBERTY ST.
WORKS, EBINGEN, GERMANY

"Maniplex" Sewing Machines

For Multiple Stitching

Built for all purposes where a number of rows of stitching are required. ¶With either form of stitch, single thread chain, double thread chain, or lock-stitch, sewing material from 1-16 inch thick, up to 1 inch thick, and up to 120 inch wide. ¶Furnished with any required number of needles, spacing to suit requirements. ¶We also build **Paper Slitting Machines** and design special machinery.

L. F. FALES

Walpole, Mass., U. S. A.

The Best and Simplest

Machine on the Market for

Cutting Out Floating Threads

of Double Sole and High Spliced Heel Hosiery

Cuts and turns at one operation

There is no limit to capacity. Depends entirely on operator. A child can operate it. Send for further particulars to the builders.

Weinerth Ktg. & Machine Co., Inc.

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The CRAWFORD

HOLLOW STEAM

PLATE PRESS

For Knit or Woolen Goods

The most reliable machine of the kind on the market.

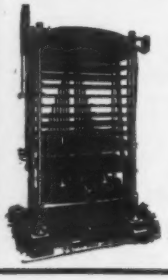
PRESS PAPERS and FENDERS

SPENCE & RIDEOUT

Successors to

J. J. CRAWFORD & SON

Established 1868 **NASHUA, N.H.**



STANDARD LATCH NEEDLES

Have You Tried Our Special Rivet?

Longer Wear, Less Mending, Better Work, Fewer Seconds.

STANDARD TRADE MARK

Excelsior Needle Co.

Largest Manufacturers of Machine Needles in the World.

Torrington, Conn.

Agents

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Excelsior General Supplies Co., 815 So. Wabash Ave., Chicago
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EXCELSIOR SEWING MACHINE NEEDLES

Highest Quality Crucible Wire, Smooth Eyes, Finest Temper, Hand Straightened.

EXCELSIOR NEEDLES

The Best Hosiery Needles in the market

Manufactured by

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WM. BREEDON'S SON

MANUFACTURERS OF

Spring Knitting Needles

AND BURR BLADES OF ALL KINDS

AMSTERDAM, N. Y.

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Established 1874. Manufacturers of all kinds of

SPRING KNITTING NEEDLES

Slides, Sinkers, Jacks, Etc.

NEW BRUNSWICK, N. J.

KEYSTONE LATCH NEEDLE CO.

JOHN C. EGLY, MGR. Manufacturers of

Patent and Regular Latch Needles

Needles for all makes of Knitters and Ribbers
Keystone Spring Bottom Needles for all makes of Knitting Machines always in stock for immediate delivery.
Special Needles made to order.

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John Eppler's Machine Works, 620 Filbert St., Phila., Pa.

LATEST IMPROVED UPRIGHT KNITTING LOOMS

For Millinery, Dress and Upholstery Trimmings and Netting

Steaming outfits for the finishing of knitted neckwear, etc.

The "Simplex" Tables, Comprising **Comparative Yarn Tables,** showing the equivalent sizes of different systems of Numbering Yarn and Different Standards. **Reed Tables. Weight of Yarn per Yard of Cloth. Tables of Knitting Machine Gauges.** Yarn Sizes for Knitting Machines. Sizes for Underwear and Hosiery. **Breaking Strength Table** of American Cotton Warp Yarns. Compiled by Textile World Record. Price 50 cents. LORD & NAGLE CO., Publishers, 144 Congress Street, Boston, Mass.

W & G High-Speed Lockstitch Finishing Machine

This machine has shown its great **value for facing and finishing Knit Shirts and Drawers, for which it is especially adapted,** because of the neatness of its stitch and the greater economy in thread used when compared with the work of chain stitch machines. It is also superseding lockstitch machines of other makes on account of its superior work, both as regards quality and quantity.

CLAIMS

Lowest Maintenance Cost
Highest Sustained Speed
Largest Production
Perfect Stitches
No Vibration
Noiseless

An Investment—
Not an Expense

Willcox & Gibbs
Sewing Machine Co.

Chief Office: 658 Broadway, New York, N. Y.

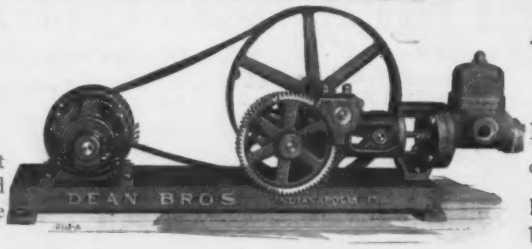
3500 to 4000 PERFECT STITCHES per minute where factory conditions permit.

WILLCOX & GIBBS SEWING MACHINE CO. Ltd. London Nottingham Paris Dresden Brussels Milan

Electric Pump

ARRANGED WITH BELT DRIVE

This pumping outfit is very compact and constructed to give long service.



All Parts Easily Accessible

Motor can be direct connected if desired or pump can be driven by gas engine.

New York Sales Office, 30 Church Street

DEAN BROS. STEAM PUMP WORKS INDIANAPOLIS

Not in the Pump Trust

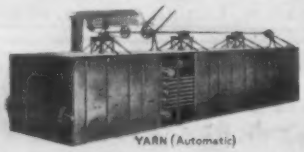
PROCTOR DRYERS

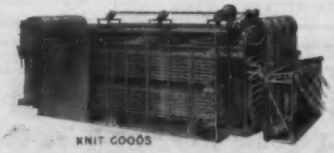
Formerly the "CYCLONE"
Fireproof

STOCKING

COTTON AND WOOL STOCK

TRUCK YARN


YARN (Automatic)


KNIT GOODS

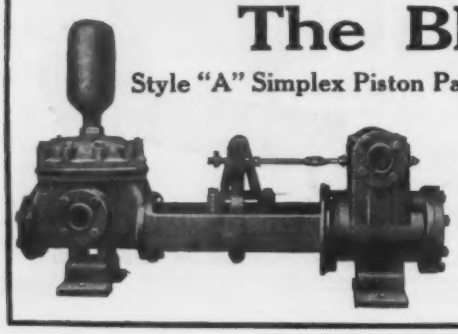
Proctor Dryers of various types are being successfully used on all kinds of goods, handling the material at a very small cost per pound

Write for Catalog Y

The Philadelphia Textile Machinery Co.
Philadelphia, Pennsylvania
H. G. Mayer, Charlotte, N. C.

The Blake-Knowles

Style "A" Simplex Piston Pattern Boiler Feed and General Service Pump



For pressure up to 250 lbs.

For further particulars send for bulletin BK876-52

The Blake & Knowles Steam Pump Works
Works, East Cambridge, Mass.

New York Office, 115 Broadway

Branch Offices in all Principal Cities

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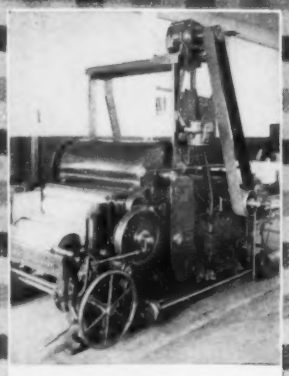
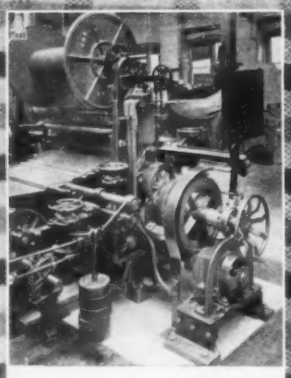


Arrangement for Motor Wiring and Control Switch for Finisher Picker, Duncan Mills, Greenville, S. C.

Increased Production Quickly Secured by G-E Motors



Continuous Running Motor Geared to Carpet Loom, Bigelow Carpet Co., Clinton, Mass.

If every machine in a textile mill were run at its highest productive capacity—operated at a steady speed to reduce wastage—and kept going without delays due to power causes, great profits could be realized from the present unusual condition of the market for this industry.

These conditions can be quickly and completely met by driving the machines with especially designed G-E textile mill motors.

The electric motor drive for textile mills developed by the General Electric Company brings electric power and the productive machine together—does away with long lines of shafting and many belts thus practically eliminating the possibility of delays due to power causes.

The engineers of the General Electric Company installed the first electric drive used in textile mills and have supplied a great majority of those used since. This vast experience is shown in each part of G-E motor drives which are specially built for textile mills in practically every detail—special motors, special controllers, special switches, special clutches, etc., etc. You are invited to avail yourself of this quick, highly economical service to increase your production to meet unusual demands.

Induction Motor Geared to Winder, Empire Silk Company, Wilkes-Barre, Pa.

General Electric Company

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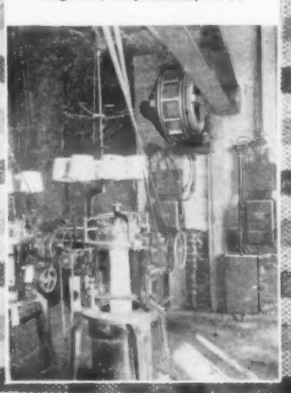
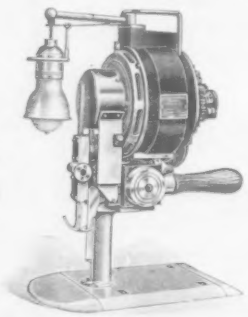
5218

25 H.P. G-E Motor Driving 124 Knitting Machines, Lion Mfg. Co., St. Johnsville, N. Y.



A SMALL SPACE



Lies between success and failure. Many have bridged this space by installing an

EASTMAN CUTTER

Its greater volume of work and lower cost of operation have been the stepping-stones many have used to reach a larger bank account.

Free Trial For All Styles

Straight Knives **Round Knives** **For Direct or Alternating Current**

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PARTS ALL INTERCHANGEABLE

THE NEW HOME OF "UNIVERSAL" MACHINES

UNIVERSAL WINDING COMPANY

PATENTEES AND **BOSTON** SOLE MANUFACTURERS

TEXTILE MEN OF THE U. S. A.

Take off your coats and go to work—things are beginning to hum and soon we shall all be working night and day

SIZOL TRADE-MARK

Sixteen cotton mills which have been idle are starting up—the rest will follow soon.

To get repeat orders from foreign lands mark your goods *"Made in America."*

To insure getting these repeat orders, *USE SIZOL.*

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